LGA/LGC/LCA/LCC SERIES

The LGA /LGC/ LCA/LCC 21, 25 and 30 ton (74, 88, 105 kW) units are configured to order units (CTO) with a wide selection of factory installed options. The LGA/LGC248H/360H gas/ electric packaged rooftop units are available in 260,000 Btuh, 360,000 Btuh and 480,000 Btuh (76.2 kW, 105.5 and 137.7 kW) heating inputs. Gas heat sections are designed with Lennox' aluminized steel tube heat exchangers. The LCA/ LCC248H/360H cooling packaged rooftop units are equipped with the same cooling sections as the LGA/ LGC248H/360H units.

LCA/LGA248, LCC/LGC300H and LCC/LGC360H units may contain a supply air blower equipped with a variable frequency drive A96 (VFD) which varies supply air CFM. As duct static increases, the supply air volume will decrease. As duct static decreases, the supply air volume will increase.

Optional electric heat is factory-or field-installed in LCA /LCC units. Electric heat operates in single or multiple stages depending on the kW input size. 30kW through 120kW heat sections are available for the LCA/LCC248H/360H. LGA/ LGC and LCA/LCC units have identical refrigerant circuits with 21, 25 and 30 ton (74, 88 and 105kW) cooling capacities. LGA/LCA360H units utilize three compressors, while the LGA/LCA300H and LGA/LCA248H units utilize four compressors.

Units are also designed for R-410A refrigerant. See unit nameplate for refrigerant type and charge. Operating pressures and pressure switch settings are significantly higher than units charged with R-22. Service equipment for R-410A units must be rated for R-410A refrigerant.

The LGA and LCA units are designed to accept any of several different energy management thermostat control systems with minimum field wiring. Factory or field provided control options connect to the unit with jack plugs. When "plugged in" the controls become an integral part of the unit wiring.

Information contained in this manual is intended for use by qulified service technicians only. All specifications are subject to change. Procedures outlined in this manual are presented as a recommendation only and do not supersede or replace local or state codes.

If the unit must be lifted for service, rig unit by attaching four cables to the holes located in the unit base rail (two holes at each corner). Refer to the installation instructions for the proper rigging technique.

LGA360

⚠WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a qualified installer or service agency.

⚠WARNING

Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

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SPECIFICATIONS LGA/LCA

General Data	Nominal Tonnage (kW)		**21 Ton**	**21 Ton**	**21 Ton**	**21 Ton**
	Model No.		**248H2B**	**248H4B**	**248H2V**	**248H4V**
	Efficiency Type		**High**	**High**	**High**	**High**
	Blower Type		**Constant Air Volume (CAV)**	**Constant Air Volume (CAV)**	**Variable Air Volume (VAV)**	**Variable Air Volume (VAV)**
Cooling Performance	Gross Cooling Capacity - Btuh (kW)		257,000 (75.3)	257,000 (75.3)	257,000 (75.3)	257,000 (75.3)
	[1] Net Cooling Capacity - Btuh (kW)		248,000 (72.6)	248,000 (72.6)	248,000 (72.6)	248,000 (72.6)
	ARI Rated Air Flow - cfm (L/s)		8,000 (3775)	8,000 (3775)	8,000 (3775)	8,000 (3775)
	Total Unit Power (kW)		21.2	21.2	21.2	21.8
	[1] EER (Btuh/Watt)		11.7	11.7	11.7	11.4
	[2] Integrated Part Load Value (Btuh/Watt)		12.3	12.7	14.0	14.2
	Refrigerant Type		R-22	R-410A	R-22	R-410A
	Refrigerant Charge Furnished	Circuit 1	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 2	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 3	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 4	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
Compressor Type (no.)			Scroll (4)	Scroll (4)	Scroll (4)	Scroll (4)
Gas Heating Options Available - See Page 7			**Standard (2 Stage), Medium (2 Stage), or High (2 Stage)**			
Outdoor Coils	Net face area - sq. ft. (m^2) total		70.6 (6.6)	70.6 (6.6)	70.6 (6.6)	70.6 (6.6)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Number of rows		2	2	2	2
	Fins per inch (m)		20 (787)	20 (787)	20 (787)	20 (787)
Outdoor Coil Fans	Motor horsepower (W)		(6) 1/3 (249)	(6) 1/3 (249)	(6) 1/3 (249)	(6) 1/3 (249)
	Motor rpm		1075	1075	1075	1075
	Total Motor watts		2500	2500	2500	2500
	Diameter - in. (mm)		(6) 24 (610)	(6) 24 (610)	(6) 24 (610)	(6) 24 (610)
	Number of blades		3	3	3	3
	Total Air volume - cfm (L/s)		21,500 (10,145)	21,500 (10,145)	21,500 (10,145)	21,500 (10,145)
Indoor Coils	Net face area - sq. ft. (m^2) total		33.3 (3.1)	33.3 (3.1)	33.3 (3.1)	33.3 (3.1)
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Number of rows		3	3	3	3
	Fins per inch (m)		14 (551)	14 (551)	14 (551)	14 (551)
	Condensate Drain - number & size		(1) 1 in. NPT coupling			
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head			
[3] Indoor Blower and Drive Selection	Nominal motor output		5 hp (3.7 kW) - 7.5 hp (5.6 kW) - 10 hp (7.5 kW)			
	Max. usable motor output (US Only)		5.75 hp (4.3 kW) - 8.63 hp (6.4 kW) - 11.5 hp (8.6 kW)			
	Motor - Drive kit		5 hp kit #1 - 660-810 rpm kit #2 - 770-965 rpm kit #6 - 560-710 rpm 7.5 hp kit #3 - 715-880 rpm kit #4 - 770-965 rpm 10 hp kit #3 - 715-880 rpm kit #5 - 850-1045 rpm		5 hp kit #7 - 965 rpm 7.5 hp kit #8 - 965 rpm 10 hp kit #9 - 1045 rpm	
	Blower wheel nominal dia. x width		(2) 18 x 15 in. (457 x 381 mm)			
Filters	Type of filter		Disposable, pleated MERV 7 (standard) or MERV 11 (optional)			
	Number and size - in. (mm)		(12) 20 x 20 x 2 (508 x 508 x 51)			
Electrical characteristics			208/230V, 460V or 575V - 60 hertz - 3 phase			

NOTE - Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

[1] Tested at conditions included in with ARI Standard 340/360; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.

[2] Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

[3] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS LGA/LCA

General Data	Nominal Tonnage (kW)	**25 Ton**	**25 Ton**	**25 Ton**	**25 Ton**
	Model No.	**300H2B**	**300H4B**	**300H2V**	**300H4V**
	Efficiency Type	**High**	**High**	**High**	**High**
	Blower Type	**Constant Air Volume (CAV)**	**Constant Air Volume (CAV)**	**Variable Air Volume (VAV)**	**Variable Air Volume (VAV)**
Cooling Performance	Gross Cooling Capacity - Btuh (kW)	311,000 (91.1)	311,000 (91.1)	311,000 (91.1)	311,000 (91.1)
	[1] Net Cooling Capacity - Btuh (kW)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)	300,000 (87.9)
	ARI Rated Air Flow - cfm (L/s)	9500 (4484)	9500 (4484)	9500 (4484)	9500 (4484)
	Total Unit Power (kW)	27.3	27.3	27.3	27.3
	[1] EER (Btuh/Watt)	11.0	11.0	11.0	11.0
	[2] Integrated Part Load Value (Btuh/Watt)	11.5	11.8	13.4	14.0
	Refrigerant Type	R-22	R-410A	R-22	R-410A
	Refrigerant Charge Furnished Circuit 1	11 lbs. 0 oz. (4.99 kg)	13 lbs. 0 oz. (5.9 kg)	12 lbs. 0 oz. (5.44 kg)	13 lbs. 0 oz. (5.9 kg)
	Circuit 2	11 lbs. 0 oz. (4.99 kg)	13 lbs. 0 oz. (5.9 kg)	12 lbs. 0 oz. (5.44 kg)	13 lbs. 0 oz. (5.9 kg)
	Circuit 3	11 lbs. 0 oz. (4.99 kg)	13 lbs. 0 oz. (5.9 kg)	12 lbs. 0 oz. (5.44 kg)	13 lbs. 0 oz. (5.9 kg)
	Circuit 4	11 lbs. 0 oz. (4.99 kg)	13 lbs. 0 oz. (5.9 kg)	12 lbs. 0 oz. (5.44 kg)	13 lbs. 0 oz. (5.9 kg)
Gas Heating Options Available - See Page 7		**Standard (2 Stage), Medium (2 Stage), or High (2 Stage)**			
Compressor Type (no.)		Scroll (4)	Scroll (4)	Scroll (4)	Scroll (4)
Outdoor Coils	Net face area - sq. ft. (m^2) total	70.6 (6.6)	70.6 (6.6)	70.6 (6.6)	70.6 (6.6)
	Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Number of rows	2	2	2	2
	Fins per inch (m)	20 (787)	20 (787)	20 (787)	20 (787)
Outdoor Coil Fans	Motor horsepower (W)	(6) 1/3 (249)	(6) 1/3 (249)	(6) 1/3 (249)	(6) 1/3 (249)
	Motor rpm	1075	1075	1075	1075
	Total Motor watts	2500	2500	2500	2500
	Diameter - in. (mm)	(6) 24 (610)	(6) 24 (610)	(6) 24 (610)	(6) 24 (610)
	Number of blades	3	3	3	3
	Total Air volume - cfm (L/s)	21,500 (10,145)	21,500 (10,145)	21,500 (10,145)	21,500 (10,145)
Evaporator Coils	Net face area - sq. ft. (m^2) total	33.3 (3.1)	33.3 (3.1)	33.3 (3.1)	33.3 (3.1)
	Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Number of rows	3	3	3	3
	Fins per inch (m)	14 (551)	14 (551)	14 (551)	14 (551)
	Condensate Drain - number and size	(1) 1 in. NPT coupling			
	Expansion device type	Balanced Port Thermostatic Expansion Valve, removeable power head			
[3] Indoor Blower and Drive Selection	Nominal motor output	5 hp (3.7 kW) - 7.5 hp (5.6 kW) - 10 hp (7.5 kW)			
	Max. usable motor output (US Only)	5.75 hp (4.3 kW) - 8.63 hp (6.4 kW) - 11.5 hp (8.6 kW)			
	Motor - Drive kit	5 hp kit #1 - 660 - 810 rpm kit #2 - 770 - 965 rpm kit #6 - 560 - 710 rpm 7.5 hp kit# 3 - 715 - 880 rpm kit# 4 - 770 - 965 rpm 10 hp kit #3 - 715-880 rpm kit #5 - 850 - 1045 rpm		5 hp kit #7 - 965 rpm 7.5 hp kit #8 - 965 rpm 10 hp kit #9 - 1045 rpm	
	Blower wheel nominal diameter x width	(2) 18 x 15 in. (457 x 381 mm)			
Filters	Type of filter	Disposable, pleated MERV 7 (standard) or MERV 11 (optional)			
	Number and size - in. (mm)	(12) 20 x 20 x 2 (508 x 508 x 51)			
Electrical characteristics		208/230V, 460V or 575V - 60 hertz - 3 phase			

NOTE - Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

[1] Tested at conditions included in with ARI Standard 340/360; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.

[2] Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

[3] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of CAV motors furnished are shown. For VAV models and in Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS LGC/LCC

General Data		Nominal Tonnage (kW)	30 Ton			
		Model No.	**360H2B**	**360H4B**	**360H2V**	**360H4V**
		Efficiency Type	**High**	**High**	**High**	**High**
		Blower Type	**Constant Air Volume (CAV)**	**Constant Air Volume (CAV)**	**Variable Air Volume (VAV)**	**Variable Air Volume (VAV)**
Cooling Performance		Gross Cooling Capacity - Btuh (kW)	351,000 (102.8)	359,000 (105.1)	351,000 (102.8)	359,000 (105.1)
		[1] Net Cooling Capacity - Btuh (kW)	336,000 (98.4)	344,000 (100.7)	336,000 (98.4)	344,000 (100.7)
		ARI Rated Air Flow - cfm (L/s)	10,500 (4955)	10,500 (4955)	10,500 (4955)	10,500 (4955)
		Total Unit Power (kW)	33.3	34.1	33.3	34.1
		[1] EER (Btuh/Watt)	10.1	10.1	10.1	10.1
		[2] Integrated Part Load Value (Btuh/Watt)	10.6	11.2	13.0	13.2
		Refrigerant Type	R-22	R-410A	R-22	R-410A
	Refrigerant Charge Furnished	Circuit 1	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 2	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 3	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
		Circuit 4	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)	12 lbs. 8 oz. (5.67 kg)	13 lbs. 0 oz. (5.90 kg)
Gas Heating Options Available - See Page 7			**Standard (2 Stage), Medium (2 Stage), or High (2 Stage)**			
Compressor Type (no.)			Scroll (4)	Scroll (4)	Scroll (4)	Scroll (4)
Outdoor Coils		Net face area - sq. ft. (m^2) total	70.6 (6.6)	70.6 (6.6)	70.6 (6.6)	70.6 (6.6)
		Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
		Number of rows	2	2	2	2
		Fins per inch (m)	20 (787)	20 (787)	20 (787)	20 (787)
Outdoor Coil Fans		Motor horsepower (W)	(6) 1/3 (249)	(6) 1/3 (249)	(6) 1/3 (249)	(6) 1/3 (249)
		Motor rpm	1075	1075	1075	1075
		Total Motor watts	2500	2500	2500	2500
		Diameter - in. (mm)	(6) 24 (610)	(6) 24 (610)	(6) 24 (610)	(6) 24 (610)
		Number of blades	3	3	3	3
		Total Air volume - cfm (L/s)	21,500 (10,145)	21,500 (10,145)	21,500 (10,145)	21,500 (10,145)
Evaporator Coils		Net face area - sq. ft. (m^2) total	33.3 (3.1)	33.3 (3.1)	33.3 (3.1)	33.3 (3.1)
		Tube diameter - in. (mm)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
		Number of rows	3	3	3	3
		Fins per inch (m)	14 (551)	14 (551)	14 (551)	14 (551)
		Condensate Drain - number & size	(1) 1 in. NPT coupling			
		Expansion device type	Balanced Port Thermostatic Expansion Valve, removeable power head			
[3] Indoor Blower and Drive Selection		Nominal motor output	5 hp (3.7 kW) - 7.5 hp (5.6 kW) - 10 hp (7.5 kW)			
		Max. usable motor output (US Only)	5.75 hp (4.3 kW) - 8.63 hp (6.4 kW) - 11.5 hp (8.6 kW)			
		Motor - Drive kit	5 hp kit #1 - 660 - 810 rpm kit #2 - 770 - 965 rpm kit #6 - 560 - 710 rpm 7.5 hp kit #3 - 715 - 880 rpm kit#4 - 770 - 965 rpm 10 hp kit #3 - 715 - 880 rpm kit #5 - 850 - 1045 rpm		5 hp kit #7 - 965 rpm 7.5 hp kit#8 - 965 rpm 10 hp kit #9 - 1045 rpm	
		Blower wheel nominal diameter x width	(2) 18 x 15 in. (457 x 381 mm)			
Filters		Type of filter	Disposable, pleated MERV 7 (standard) or MERV 11 (optional)			
		Number and size - in. (mm)	(12) 20 x 20 x 2 (508 x 508 x 51)			
Electrical characteristics			208/230V, 460V or 575V - 60 hertz - 3 phase			

NOTE - Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

[1] Tested at conditions included in with ARI Standard 340/360; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.

[2] Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

[3] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of CAV motors furnished are shown. On VAV models and in Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS
3 compressors

General Data	Nominal Tonnage (kW)		**30 Ton**		
	Model No.		**LCA/LGA360H2B (R-22) LCA/LGA360H4B (R-410A)**		
	Efficiency Type		**High**		
Cooling Performance	Gross Cooling Capacity - Btuh (kW)		355,000 (104.0) (R-22) 377,000 (110.5) (R-410A)		
	[1] Net Cooling Capacity - Btuh (kW)		336,000 (98.4) (R-22) 360,000 (105.5) (R-410A)		
	ARI Rated Air Flow - cfm (L/s)		10,500 (4955)		
	Total Unit Power (kW)		32.9 (R-22) 37.1 (R-410A)		
	[1] EER (Btuh/Watt)		10.2 (R-22) 9.7 (R-410A)		
	[2] Integrated Part Load Value (Btuh/Watt)		10.6 (R-22) 10.4 (R-410A)		
	Refrigerant Charge Furnished (R-22)	Circuit 1	17 lbs. 0 oz (7.71 kg)		
		Circuit 2	17 lbs. 0 oz (7.71 kg)		
		Circuit 3	17 lbs. 0 oz (7.71 kg)		
		Circuit 4	- - -		
	Refrigerant Charge Furnished (R-410A)	Circuit 1	18 lbs. 8 oz. (8.39 kg)		
		Circuit 2	18 lbs. 8 oz. (8.39 kg)		
		Circuit 3	18 lbs. 8 oz. (8.39 kg)		
Gas Heating Performance		Heat Input Type	**Standard 2 Stage**	**Medium 2 Stage**	**High 2 Stage**
	Input - Btuh (kW)	First Stage	169,000 (49.5)	234,000 (68.6)	312,000 (91.4)
		Second Stage	260,000 (76.2)	360,000 (105.5)	480,000 (140.6)
	Output - Btuh (kW)	Second Stage	208,000 (60.9)	288,000 (84.4)	384,000 (112.5)
		CSA Thermal Efficiency	80.0%		
		Gas Supply Connections	1		
	Recommended Gas Supply Pressure	Natural	7 in. w.g. (1.7 kPa)		
		LPG/Propane	11 in. w.g. (2.7 kPa)		
Compressor Type (no.)			Scroll (3)		
Condenser Coils	Net face area - sq. ft. (m^2) total		70.6 (6.6)		
	Tube diameter - in. (mm)		3/8 (9.5)		
	Number of rows		2		
	Fins per inch (m)		20 (787)		
Condenser Fans	Motor horsepower (W)		(6) 1/3 (249)		
	Motor rpm		1075		
	Total Motor watts		2500		
	Diameter - in. (mm)		(6) 24 (610)		
	Number of blades		3		
	Total Air volume - cfm (L/s)		21,500 (10,145)		
Evaporator Coils	Net face area - sq. ft. (m^2) total		33.3 (3.1)		
	Tube diameter - in. (mm)		3/8 (9.5)		
	Number of rows		3		
	Fins per inch (m)		14 (551)		
	Condensate Drain - number and size		(1) 1 in. NPT coupling		
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head		
[3] **Indoor Blower and Drive Selection**	Nominal motor output		5 hp (3.7 kW) - 7.5 hp (5.6 kW) - 10 hp (7.5 kW)		
	Max. usable motor output (US Only)		5.75 hp (4.3 kW) - 8.63 hp (6.4 kW) - 11.5 hp (8.6 kW)		
	Motor - Drive kit		5 hp kit #1 - 660 - 810 rpm kit #2 - 770 - 965 rpm kit #6 - 560 - 710 rpm 7.5 hp kit #3 - 715 - 880 rpm kit#4 - 770 - 965 rpm 10 hp kit #3 - 715 - 880 rpm kit #5 - 850 - 1045 rpm		
	Blower wheel nominal diameter x width		(2) 18 x 15 in. (457 x 381 mm)		
Filters	Type of filter		Disposable, pleated MERV 7 (standard) or MERV 11 (optional)		
	Number and size - in. (mm)		(12) 20 x 20 x 2 (508 x 508 x 51)		
Electrical characteristics			208/230V, 460V or 575V - 60 hertz - 3 phase		

NOTE - Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

[1] Tested at conditions included in with ARI Standard 340/360; 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.

[2] Integrated Part Load Value tested at 80°F (27°C) outdoor air temperature.

[3] Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished by Lennox are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

SPECIFICATIONS GAS HEAT

Gas Heating Performance		Heat Input Type	Standard (2 Stage)	Medium (2 Stage)	High (2 Stage)
	Input - Btuh (KW)	First Stage	169,000 (49.5)	234,000 (68.6)	312,000 (91.4)
		Second Stage	260,000 (76.2)	360,000 (105.5)	480,000 (140.6)
	Output - Btuh (kW)	First Stage	- - -	- - -	- - -
		Second Stage	208,000 (60.9)	288,000 (84.4)	384,000 (112.5)
	CSA Thermal Efficiency		80.0%		
	Gas Supply Connections		1 in. npt		
	Recommended Gas Supply Pressure - Natural		7 in. w.g. (1.7 kPa)		
	LPG/Propane		11 in. w.g. (2.7 kPa)		

HIGH ALTITUDE

Units may be installed at altitudes up to 2000 feet (610 m) above sea level without any modification. At altitudes above 2000 feet (610 m), units must be derated to match gas manifold pressures shown in table below. NOTE - This is the only permissible derate for these units.

Altitude - ft. (m)	Natural Gas		LPG/Propane	
	in. w.g.	kPa	in. w.g.	kPa
2001 - 3000 (610 - 915)	3.6	0.90	10.2	2.54
3001 - 4000 (915 - 1220)	3.5	0.87	9.9	2.46
4001 - 5000 (1220 - 1525)	3.4	0.85	9.6	2.39
5001 - 6000 (1525 - 1830)	3.3	0.82	9.4	2.34
6001 - 7000 (1830 - 2135)	3.2	0.80	9.1	2.26
7001 - 8000 (2135 - 2440)	3.1	0.77	8.8	2.19

ELECTRIC HEAT CAPACITIES

Volts Input	30 kW			45 kW			60 kW			90 kW			120 kW		
	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps	kW Input	Btuh Output	No. of Steps
208	22.5	76,800	1	33.8	115,300	2	45.0	153,600	2	67.6	230,700	2	90.2	307,800	2
220	25.2	86,000	1	37.8	129,000	2	50.4	172,000	2	75.6	258,000	2	100.8	344,000	2
230	27.5	93,900	1	41.3	141,000	2	55.1	188,000	2	82.7	282,200	2	110.2	376,100	2
240	30.0	102,400	1	45.0	153,600	2	60.0	204,800	2	90.0	307,100	2	120.0	409,500	2
440	25.2	86,000	1	37.8	129,000	2	50.4	172,000	2	75.6	258,000	2	100.8	344,000	2
460	27.5	93,900	1	41.3	141,000	2	55.1	188,000	2	82.7	282,200	2	110.2	376,100	2
480	30.0	102,400	1	45.0	153,600	2	60.0	204,800	2	90.0	307,100	2	120.0	409,500	2
550	25.2	86,000	1	37.8	129,000	2	50.4	172,000	2	75.6	258,000	2	100.8	344,000	2
575	27.5	93,900	1	41.3	141,000	2	55.1	188,000	2	82.7	282,200	2	110.2	376,100	2
600	30.0	102,400	1	45.0	153,600	2	60.0	204,800	2	90.0	307,100	2	120.0	409,500	2

ELECTRICAL DATA

3 compressors

Model No.		LGA/LCA360H (R-22)									LGA/LCA360H (R-410A)								
Line voltage data - 60 Hz - 3 phase		208/230V			460V			575V			208/230V			460V			575V		
Compressors (3)	Rated load amps each (total)	30.1 (90.3)			15.5 (46.5)			12.1 (36.3)			33.3 (99.9)			17.9 (53.7)			11.5 (34.5)		
	Locked rotor amps each (total)	225 (675)			114 (342)			80 (240)			239 (717)			125 (375)			80 (240)		
Condenser Fan Motors (6)	Full load amps each(total)	2.4 (14.4)			1.3 (7.8)			1 (6)			2.4 (14.4)			1.3 (7.8)			1 (6)		
	Locked rotor amps each (total)	4.7 (28.2)			2.4 (14.4)			1.9 (11.4)			4.7 (28.2)			2.4 (14.4)			1.9 (11.4)		
Evaporator Blower Motor	Motor Output - hp	5	7.5	10	5	7.5	10	5	7.5	10	5	7.5	10	5	7.5	10	5	7.5	10
	kW	3.7	5.6	7.5	3.7	5.6	7.5	3.7	5.6	7.5	3.7	5.6	7.5	3.7	5.6	7.5	3.7	5.6	7.5
	Full load amps	16.7	24.2	30.8	7.6	11	14	6.1	9	11	16.7	24.2	30.8	7.6	11	14	6.1	9	11
	Locked rotor amps	105	152	193	45.6	66	84	36.6	54	66	105	152	193	45.6	66	84	36.6	54	66
[1] Maximum Overcurrent Protection (amps)	With Exhaust Fans	150	150	175	80	80	90	60	60	70	175	175	175	90	90	100	60	60	60
	Less Exhaust Fans	150	150	150	80	80	80	60	60	60	150	175	175	90	90	90	60	60	60
[2] Minimum Circuit Ampacity	With Exhaust Fans	137	144	151	70	74	77	55	58	60	147	155	161	78	81	84	53	56	58
	Less Exhaust Fans	129	137	143	66	70	73	52	55	57	140	147	154	74	77	80	50	53	55
Optional Power Exhaust Fans	(No.) Horsepower (W)	(3) 1/3 (249)			(3) 1/3 (249)			(3) 1/3 (249)			(3) 1/3 (249)			(3) 1/3 (249)			(3) 1/3 (249)		
	Full load amps (total)	7.2			3.9			3			7.2			3.9			3		
	Locked rotor amps (total)	14.1			7.2			5.7			14.1			7.2			5.7		
Service Outlet (2) 115 volt GFCI (amp rating)		15			15			15			15			15			15		

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

1 HACR type breaker or fuse.

2 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA LGA/LCA

21 TON HIGH EFFICIENCY (R-22) **248H2**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Compressors (4)	Rated Load Amps (total)		17.3 (69.2)			9 (36)			7.1 (28.4)		
	Locked Rotor Amps (total)		123 (492)			62 (248)			50 (200)		
Outdoor Fan Motors (6)	Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
	Locked Rotor Amps (total)		4.7 (28.2)			2.4 (14.4)			1.9 (11.4)		
Standard PEF (3)	Horsepower (W)		1/3 (249)			1/3 (249)			1/3 (249)		
	Full Load Amps(total)		7.2 (21.6)			3.9 (11.7)			3 (9)		
	Locked Rotor Amps (total)		14.1 (42.3)			7.2 (21.6)			5.7 (17.1)		
50% High Static PEF (2)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (15)			3.4 (6.8)			2.7 (5.4)		
	Locked Rotor Amps (total)		69.4 (138.8)			31.4 (62.8)			20.1 (40.2)		
100% High Static PEF (3)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
	Locked Rotor Amps (total)		69.4 (208.2)			31.4 (94.2)			20.1 (60.3)		
Service Outlet 115V GFI			15 Amps			15 Amps			15 Amps		
Indoor Blower Motor	Horsepower		**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
	Rated Load Amps		16.7	24.2	30.8	7.6	11	14	6.1	9	11
	Locked Rotor Amps		105	152	193	45.6	66	84	36.6	54	66
[1] Minimum Circuit Ampacity	with Standard PEF	**0 kW**	112	120	126	58	61	64	46	49	51
		30 kW	121	130	138	60	64	68	48	52	54
		45 kW	166	175	183	82	87	90	66	70	72
		60 kW	175	184	192	87	91	95	70	73	76
		90 kW	247	256	264	123	127	131	98	102	105
		120 kW	319	328	337	159	163	167	127	131	133
	with 50% High Static PEF	**0 kW**	120	128	134	61	64	67	48	51	53
		30 kW	130	140	148	64	68	72	51	55	57
		45 kW	175	185	193	86	90	94	69	73	75
		60 kW	184	194	202	91	95	99	73	76	79
		90 kW	257	266	274	127	131	135	101	105	108
		120 kW	329	338	346	163	167	171	130	134	136
	with 100% High Static PEF	**0 kW**	128	135	142	64	68	71	51	54	56
		30 kW	140	149	157	68	72	76	54	58	60
		45 kW	185	194	202	90	95	98	72	76	78
		60 kW	194	203	211	95	99	103	76	80	82
		90 kW	266	275	284	131	135	139	105	108	111
		120 kW	338	348	356	167	171	175	134	137	140
	without power exhaust		105	113	119	54	58	61	43	46	48
[2] Maximum Overcurrent Protection	with Standard PEF	**0 kW**	125	125	150	60	70	70	50	50	60
		30 kW	125	150	150	60	70	70	50	60	60
		45 kW	175	175	200	90	90	90	70	70	80
		60 kW	175	200	200	90	100	100	70	80	80
		90 kW	250	[3] 300	[3] 300	125	150	150	100	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 50% High Static PEF	**0 kW**	125	150	150	70	70	80	50	60	60
		30 kW	150	150	150	70	70	80	60	60	60
		45 kW	175	200	200	90	90	100	70	80	80
		60 kW	200	200	225	100	100	100	80	80	80
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 100% High Static PEF	**0 kW**	150	150	175	70	70	80	60	60	60
		30 kW	150	150	175	70	80	80	60	60	60
		45 kW	200	200	225	90	100	100	80	80	80
		60 kW	200	225	225	100	100	110	80	80	90
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	125
		120 kW	[3] 350	[3] 350	[3] 400	175	175	175	150	150	150
	without power exhaust		110	125	150	60	60	70	45	50	50

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

TABLE CONTINUED ON NEXT PAGE

[1] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

[2] HACR type breaker or fuse.

[3] Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA LGA/LCA

21 TON HIGH EFFICIENCY (R-22) **248H2**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Indoor Blower Motor Horsepower			**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
[4] Electric Heat Control Kit			**15K13**			**15K92**			**15K93**		
Disconnect	with Standard PEF	**0 kW**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**
	with 50% High Static PEF	**0 kW**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M15**
	with 100% High Static PEF	**0 kW**	**84M14**	**84M14**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M14**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M15**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M15**	**84M15**
	without power exhaust		**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
Terminal Block	with Standard PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-175	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 50% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 100% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	without power exhaust		LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
[5] Unit Fuse Block	with Standard PEF		LAFB 125A4	LAFB 125A4	LAFB 150A3	LAFB 60A8	LAFB 70A8	LAFB 70A8	LAFB 50A8	LAFB 50A8	LAFB 60A8
	with 50% High Static PEF		LAFB 125A4	LAFB 150A3	LAFB 150A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 50A8	LAFB 60A8	LAFB 60A8
	with 100% High Static PEF		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 60A8	LAFB 60A8	LAFB 60A8
	without power exhaust		LAFB 110A4	LAFB 125A4	LAFB 150A3	LAFB 60A8	LAFB 60A8	LAFB 70A8	LAFB 45A8	LAFB 50A8	LAFB 50A8

[4] Electric Heat Control module only for use with 45 kW or more of electric heat.
[5] Only for use with electric heat.

ELECTRICAL/ELECTRIC HEAT DATA LGA/LCA

21 TON HIGH EFFICIENCY (R-410A) **248H4**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Compressors (4)	Rated Load Amps (total)		18.1 (72.4)			9 (36)			6.8 (27.2)		
	Locked Rotor Amps (total)		137 (548)			62 (248)			50 (200)		
Outdoor Fan Motors (6)	Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
	Locked Rotor Amps (total)		4.7 (28.2)			2.4 (14.4)			1.9 (11.4)		
Standard PEF (3)	Horsepower (W)		1/3 (249)			1/3 (249)			1/3 (249)		
	Full Load Amps(total)		7.2 (21.6)			3.9 (11.7)			3 (9)		
	Locked Rotor Amps (total)		14.1 (42.3)			7.2 (21.6)			5.7 (17.1)		
50% High Static PEF (2)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (15)			3.4 (6.8)			2.7 (5.4)		
	Locked Rotor Amps (total)		69.4 (138.8)			31.4 (62.8)			20.1 (40.2)		
100% High Static PEF (3)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
	Locked Rotor Amps (total)		69.4 (208.2)			31.4 (94.2)			20.1 (60.3)		
Service Outlet 115V GFI			15 Amps			15 Amps			15 Amps		
Indoor Blower Motor	Horsepower		**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
	Rated Load Amps		16.7	24.2	30.8	7.6	11	14	6.1	9	11
	Locked Rotor Amps		105	152	193	45.6	66	84	36.6	54	66
[1] Minimum Circuit Ampacity	with Standard PEF	**0 kW**	116	123	130	58	61	64	44	47	49
		30 kW	121	130	138	60	64	68	48	52	54
		45 kW	166	175	183	82	87	90	66	70	72
		60 kW	175	184	192	87	91	95	70	73	76
		90 kW	247	256	264	123	127	131	98	102	105
		120 kW	319	328	337	159	163	167	127	131	133
	with 50% High Static PEF	**0 kW**	124	131	138	61	64	67	47	50	52
		30 kW	130	140	148	64	68	72	51	55	57
		45 kW	175	185	193	86	90	94	69	73	75
		60 kW	184	194	202	91	95	99	73	76	79
		90 kW	257	266	274	127	131	135	101	105	108
		120 kW	329	338	346	163	167	171	130	134	136
	with 100% High Static PEF	**0 kW**	131	139	145	64	68	71	50	52	54
		30 kW	140	149	157	68	72	76	54	58	60
		45 kW	185	194	202	90	95	98	72	76	78
		60 kW	194	203	211	95	99	103	76	80	82
		90 kW	266	275	284	131	135	139	105	108	111
		120 kW	338	348	356	167	171	175	134	137	140
	without power exhaust		109	116	123	54	58	61	41	44	46
[2] Maximum Overcurrent Protection	with Standard PEF	**0 kW**	125	125	150	60	70	70	50	50	60
		30 kW	125	150	150	60	70	70	50	60	60
		45 kW	175	175	200	90	90	90	70	70	80
		60 kW	175	200	200	90	100	100	70	80	80
		90 kW	250	[3] 300	[3] 300	125	150	150	100	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 50% High Static PEF	**0 kW**	125	150	150	70	70	80	50	50	60
		30 kW	150	150	150	70	70	80	60	60	60
		45 kW	175	200	200	90	90	100	70	80	80
		60 kW	200	200	225	100	100	100	80	80	80
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 100% High Static PEF	**0 kW**	150	150	175	70	70	80	50	60	60
		30 kW	150	150	175	70	80	80	60	60	60
		45 kW	200	200	225	90	100	100	80	80	80
		60 kW	200	225	225	100	100	110	80	80	90
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	125
		120 kW	[3] 350	[3] 350	[3] 400	175	175	175	150	150	150
	without power exhaust		125	125	150	60	60	70	45	50	50

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

TABLE CONTINUED ON NEXT PAGE

1 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

2 HACR type breaker or fuse.

3 Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA LGA/LCA

21 TON HIGH EFFICIENCY (R-410A) **248H4**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Indoor Blower Motor Horsepower			**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
[4] Electric Heat Control Kit			**15K13**			**15K92**			**15K93**		
Disconnect	with Standard PEF	**0 kW**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**
	with 50% High Static PEF	**0 kW**	**84M14**	**84M14**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M14**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M15**
	with 100% High Static PEF	**0 kW**	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M15**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M15**	**84M15**
	without power exhaust		**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
Terminal Block	with Standard PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-175	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 50% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 100% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	without power exhaust		LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
[5] Unit Fuse Block	with Standard PEF		LAFB 125A4	LAFB 124A4	LAFB 150A3	LAFB 60A8	LAFB 70A8	LAFB 70A8	LAFB 50A8	LAFB 50A8	LAFB 60A8
	with 50% High Static PEF		LAFB 125A4	LAFB 150A3	LAFB 150A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 50A8	LAFB 50A8	LAFB 60A8
	with 100% High Static PEF		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 50A8	LAFB 60A8	LAFB 60A8
	without power exhaust		LAFB 125A4	LAFB 125A4	LAFB 150A3	LAFB 60A8	LAFB 60A8	LAFB 70A8	LAFB 45A8	LAFB 50A8	LAFB 50A8

[4] Electric Heat Control module only for use with 45 kW or more of electric heat.
[5] Only for use with electric heat.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

25 TON HIGH EFFICIENCY (R-22) **300H2**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Compressors (4)	Rated Load Amps (total)		18.6 (74.4)			9 (36)			7.4 (29.6)		
	Locked Rotor Amps (total)		156 (624)			75 (300)			54 (216)		
Outdoor Fan Motors (6)	Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
	Locked Rotor Amps (total)		4.7 (28.2)			2.4 (14.4)			1.9 (11.4)		
Standard PEF (3)	Horsepower (W)		1/3 (249)			1/3 (249)			1/3 (249)		
	Full Load Amps(total)		7.2 (21.6)			3.9 (11.7)			3 (9)		
	Locked Rotor Amps (total)		14.1 (42.3)			7.2 (21.6)			5.7 (17.1)		
50% High Static PEF (2)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (15)			3.4 (6.8)			2.7 (5.4)		
	Locked Rotor Amps (total)		69.4 (138.8)			31.4 (62.8)			20.1 (40.2)		
100% High Static PEF (3)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
	Locked Rotor Amps (total)		69.4 (208.2)			31.4 (94.2)			20.1 (60.3)		
Service Outlet 115V GFI			15 Amps			15 Amps			15 Amps		
Indoor Blower Motor	Horsepower		**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
	Rated Load Amps		16.7	24.2	30.8	7.6	11	14	6.1	9	11
	Locked Rotor Amps		105	152	193	45.6	66	84	36.6	54	66
[1] Minimum Circuit Ampacity	with Standard PEF	**0 kW**	118	125	132	58	61	64	47	50	52
		30 kW	121	130	138	60	64	68	48	52	54
		45 kW	166	175	183	82	87	90	66	70	72
		60 kW	175	184	192	87	91	95	70	73	76
		90 kW	247	256	264	123	127	131	98	102	105
		120 kW	319	328	337	159	163	167	127	131	133
	with 50% High Static PEF	**0 kW**	126	133	140	61	64	67	49	52	54
		30 kW	130	140	148	64	68	72	51	55	57
		45 kW	175	185	193	86	90	94	69	73	75
		60 kW	184	194	202	91	95	99	73	76	79
		90 kW	257	266	274	127	131	135	101	105	108
		120 kW	329	338	346	163	167	171	130	134	136
	with 100% High Static PEF	**0 kW**	133	141	147	64	68	71	52	55	57
		30 kW	140	149	157	68	72	76	54	58	60
		45 kW	185	194	202	90	95	98	72	76	78
		60 kW	194	203	211	95	99	103	76	80	82
		90 kW	266	275	284	131	135	139	105	108	111
		120 kW	338	348	356	167	171	175	134	137	140
	without power exhaust		111	118	125	54	58	61	44	47	49
[2] Maxium Overcurrent Protection	with Standard PEF	**0 kW**	125	150	150	60	70	70	50	50	60
		30 kW	125	150	150	60	70	70	50	60	60
		45 kW	175	175	200	90	90	90	70	70	80
		60 kW	175	200	200	90	100	100	70	80	80
		90 kW	250	[3] 300	[3] 300	125	150	150	100	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 50% High Static PEF	**0 kW**	150	150	150	70	70	80	50	60	60
		30 kW	150	150	150	70	70	80	60	60	60
		45 kW	175	200	200	90	90	100	70	80	80
		60 kW	200	200	225	100	100	100	80	80	80
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 100% High Static PEF	**0 kW**	150	150	175	70	70	80	60	60	60
		30 kW	150	150	175	70	80	80	60	60	60
		45 kW	200	200	225	90	100	100	80	80	80
		60 kW	200	225	225	100	100	110	80	80	90
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	125
		120 kW	[3] 350	[3] 350	[3] 400	175	175	175	150	150	150
	without power exhaust		125	125	150	60	60	70	50	50	60

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

TABLE CONTINUED ON NEXT PAGE

1 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

2 HACR type breaker or fuse.

3 Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

25 TON HIGH EFFICIENCY (R-22) **300H2**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Indoor Blower Motor Horsepower			**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
[4] Electric Heat Control Kit			**15K13**			**15K92**			**15K93**		
Disconnect	with Standard PEF	**0 kW**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	NA	NA	NA	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	NA	NA	NA	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**
	with 50% High Static PEF	**0 kW**	**84M14**	**84M14**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M14**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	NA	NA	NA	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	NA	NA	NA	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M15**
	with 100% High Static PEF	**0 kW**	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		90 kW	NA	NA	NA	**84M14**	**84M14**	**84M15**	**84M14**	**84M14**	**84M14**
		120 kW	NA	NA	NA	**84M15**	**84M15**	**84M15**	**84M14**	**84M15**	**84M15**
	without power exhaust		**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
Terminal Block	with Standard PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-175	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 50% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 100% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	without power exhaust		LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
[5] Unit Fuse Block	with Standard PEF		LAFB 125A4	LAFB 150A3	LAFB 150A3	LAFB 60A8	LAFB 70A8	LAFB 70A8	LAFB 50A8	LAFB 50A8	LAFB 60A8
	with 50% High Static PEF		LAFB 150A3	LAFB 150A3	LAFB 150A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 50A8	LAFB 60A8	LAFB 60A8
	with 100% High Static PEF		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 60A8	LAFB 60A8	LAFB 60A8
	without power exhaust		LAFB 125A4	LAFB 125A4	LAFB 150A3	LAFB 60A8	LAFB 60A8	LAFB 70A8	LAFB 50A8	LAFB 50A8	LAFB 60A8

[4] Electric Heat Control module only for use with 45 kW or more of electric heat.
[5] Only for use with electric heat.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

25 TON HIGH EFFICIENCY (R-410A) **300H4**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Compressors (4)	Rated Load Amps (total)		22.4 (89.6)			10.6 (42.4)			7.7 (30.8)		
	Locked Rotor Amps (total)		149 (596)			75 (300)			54 (216)		
Outdoor Fan Motors (6)	Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
	Locked Rotor Amps (total)		4.7 (28.2)			2.4 (14.4)			1.9 (11.4)		
Standard PEF (3)	Horsepower (W)		1/3 (249)			1/3 (249)			1/3 (249)		
	Full Load Amps(total)		7.2 (21.6)			3.9 (11.7)			3 (9)		
	Locked Rotor Amps (total)		14.1 (42.3)			7.2 (21.6)			5.7 (17.1)		
50% High Static PEF (2)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (15)			3.4 (6.8)			2.7 (5.4)		
	Locked Rotor Amps (total)		69.4 (138.8)			31.4 (62.8)			20.1 (40.2)		
100% High Static PEF (3)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
	Locked Rotor Amps (total)		69.4 (208.2)			31.4 (94.2)			20.1 (60.3)		
Service Outlet 115V GFI			15 Amps			15 Amps			15 Amps		
Indoor Blower Motor	Horsepower		**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
	Rated Load Amps		16.7	24.2	30.8	7.6	11	14	6.1	9	11
	Locked Rotor Amps		105	152	193	45.6	66	84	36.6	54	66
[1] Minimum Circuit Ampacity	with Standard PEF	**0 kW**	134	141	148	65	68	71	48	51	53
		30 kW	134	141	148	65	68	71	48	52	54
		45 kW	166	175	183	82	87	90	66	70	72
		60 kW	175	184	192	87	91	95	70	73	76
		90 kW	247	256	264	123	127	131	98	102	105
		120 kW	319	328	337	159	163	167	127	131	133
	with 50% High Static PEF	**0 kW**	142	149	156	68	71	74	51	54	56
		30 kW	142	149	156	68	71	74	51	55	57
		45 kW	175	185	193	86	90	94	69	73	75
		60 kW	184	194	202	91	95	99	73	76	79
		90 kW	257	266	274	127	131	135	101	105	108
		120 kW	329	338	346	163	167	171	130	134	136
	with 100% High Static PEF	**0 kW**	149	157	163	71	75	78	53	56	58
		30 kW	149	157	163	71	75	78	54	58	60
		45 kW	185	194	202	90	95	98	72	76	78
		60 kW	194	203	211	95	99	103	76	80	82
		90 kW	266	275	284	131	135	139	105	108	111
		120 kW	338	348	356	167	171	175	134	137	140
	without power exhaust		127	134	141	61	64	67	45	48	50
[2] Maxium Overcurrent Protection	with Standard PEF	**0 kW**	150	150	175	70	70	80	50	60	60
		30 kW	150	150	175	70	70	80	50	60	60
		45 kW	175	175	200	90	90	90	70	70	80
		60 kW	175	200	200	90	100	100	70	80	80
		90 kW	250	[3] 300	[3] 300	125	150	150	100	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 50% High Static PEF	**0 kW**	150	150	175	70	80	80	60	60	60
		30 kW	150	150	175	70	80	80	60	60	60
		45 kW	175	200	200	90	90	100	70	80	80
		60 kW	200	200	225	100	100	100	80	80	80
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 100% High Static PEF	**0 kW**	150	175	175	80	80	90	60	60	60
		30 kW	150	175	175	80	80	90	60	60	60
		45 kW	200	200	225	90	100	100	80	80	80
		60 kW	200	225	225	100	100	110	80	80	90
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	125
		120 kW	[3] 350	[3] 350	[3] 400	175	175	175	150	150	150
	without power exhaust		150	150	150	70	70	80	50	50	60

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

TABLE CONTINUED ON NEXT PAGE

[1] Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

[2] HACR type breaker or fuse.

[3] Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

25 TON HIGH EFFICIENCY (R-410A) **300H4**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Indoor Blower Motor Horsepower			**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
[4] Electric Heat Control Kit			**15K13**			**15K92**			**15K93**		
Disconnect	with Standard PEF	**0 kW**	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**
	with 50% High Static PEF	**0 kW**	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		30 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M15**
	with 100% High Static PEF	**0 kW**	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		30 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M15**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M15**	**84M15**
	without power exhaust		**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
Terminal Block	with Standard PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-175	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 50% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 100% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	without power exhaust		LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
Unit Fuse Block	with Standard PEF		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 50A8	LAFB 60A8	LAFB 60A8
	with 50% High Static PEF		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 80A6	LAFB 80A6	LAFB 60A8	LAFB 60A8	LAFB 60A8
	with 100% High Static PEF		LAFB 150A3	LAFB 175A3	LAFB 175A3	LAFB 80A6	LAFB 80A6	LAFB 90A6	LAFB 60A8	LAFB 60A8	LAFB 60A8
	without power exhaust		LAFB 150A3	LAFB 150A3	LAFB 150A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 50A8	LAFB 50A8	LAFB 60A8

[4] Electric Heat Control module only for use with 45 kW or more of electric heat.
[5] Only for use with electric heat.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

30 TON HIGH EFFICIENCY (R-22) **360H2**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Compressors (4)	Rated Load Amps (total)		22.4 (89.6)			10.9 (43.6)			8.3 (33.2)		
	Locked Rotor Amps (total)		164 (656)			100 (400)			78 (312)		
Outdoor Fan Motors (6)	Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
	Locked Rotor Amps (total)		4.7 (28.2)			2.4 (14.4)			1.9 (11.4)		
Standard PEF (3)	Horsepower (W)		1/3 (249)			1/3 (249)			1/3 (249)		
	Full Load Amps(total)		7.2			3.9			3		
	Locked Rotor Amps(total)		14.1			7.2			5.7		
50% High Static PEF (2)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (15)			3.4 (6.8)			2.7 (5.4)		
	Locked Rotor Amps(total)		69.4 (138.8)			31.4 (62.8)			20.1 (40.2)		
100% High Static PEF (3)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
	Locked Rotor Amps(total)		69.4 (208.2)			31.4 (94.2)			20.1 (60.3)		
Service Outlet 115V GFI			15 Amps			15 Amps			15 Amps		
Indoor Blower Motor	Horsepower		**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
	Full Load Amps		16.7	24.2	30.8	7.6	11	14	6.1	9	11
	Locked Rotor Amps		105	152	193	45.6	66	84	36.6	54	66
[1] Minimum Circuit Ampacity	with Standard PEF	**0 kW**	134	141	148	66	70	73	51	54	56
		30 kW	134	141	148	66	70	73	51	54	56
		45 kW	166	175	183	82	87	90	66	70	72
		60 kW	175	184	192	87	91	95	70	73	76
		90 kW	247	256	264	123	127	131	98	102	105
		120 kW	319	328	337	159	163	167	127	131	133
	with 50% High Static PEF	**0 kW**	142	149	156	69	72	75	53	56	58
		15 kW	142	149	156	69	72	75	53	56	58
		30 kW	175	185	193	86	90	94	69	73	75
		45 kW	184	194	202	91	95	99	73	76	79
		60 kW	257	266	274	127	131	135	101	105	108
		120 kW	329	338	346	163	167	171	130	134	136
	with 100% High Static PEF	**0 kW**	149	157	163	72	76	79	56	59	61
		15 kW	149	157	163	72	76	79	56	59	61
		30 kW	185	194	202	90	95	98	72	76	78
		45 kW	194	203	211	95	99	103	76	80	82
		60 kW	266	275	284	131	135	139	105	108	111
		120 kW	338	348	356	167	171	175	134	137	140
	without power exhaust		127	134	141	62	66	69	48	51	53
[2] Maximum Overcurrent Protection	with Standard PEF	**0 kW**	150	150	175	70	80	80	60	60	60
		30 kW	150	150	175	70	80	80	60	60	60
		45 kW	175	175	200	90	90	90	70	70	80
		60 kW	175	200	200	90	100	100	70	80	80
		90 kW	250	[3] 300	[3] 300	125	150	150	100	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 50% High Static PEF	**0 kW**	150	150	175	70	80	80	60	60	60
		30 kW	150	150	175	70	80	80	60	60	60
		45 kW	175	200	200	90	90	100	70	80	80
		60 kW	200	200	225	100	100	100	80	80	80
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 100% High Static PEF	**0 kW**	150	175	175	80	80	90	60	60	70
		30 kW	150	175	175	80	80	90	60	60	70
		45 kW	200	200	225	90	100	100	80	80	80
		60 kW	200	225	225	100	100	110	80	80	90
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	125
		120 kW	[3] 350	[3] 350	[3] 400	175	175	175	150	150	150
	without power exhaust		150	150	150	70	70	80	50	60	60

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

TABLE CONTINUED ON NEXT PAGE

1 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

2 HACR type breaker or fuse.

3 Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

30 TON HIGH EFFICIENCY (R-22) **360H2**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Indoor Blower Motor Horsepower			**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
[4] Electric Heat Control Kit			**15K13**			**15K92**			**15K93**		
Disconnect	with Standard PEF	**0 kW**	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		30 kW	**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**
	with 50% High Static PEF	**0 kW**	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		30 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M13**	**84M14**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M15**
	with 100% High Static PEF	**0 kW**	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		30 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M15**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M15**	**84M15**
	without power exhaust		**84M14**	**84M15**	**84M15**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**	**84M13**
Terminal Block	with Standard PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-175	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 50% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 100% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	without power exhaust		LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
Unit Fuse Block	with Standard PEF		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 80A6	LAFB 80A6	LAFB 60A8	LAFB 60A8	LAFB 60A8
	with 50% High Static PEF		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 80A6	LAFB 80A6	LAFB 60A8	LAFB 60A8	LAFB 60A8
	with 100% High Static PEF		LAFB 150A3	LAFB 175A3	LAFB 175A3	LAFB 80A6	LAFB 80A6	LAFB 90A6	LAFB 60A8	LAFB 60A8	LAFB 70A8
	without power exhaust		LAFB 150A3	LAFB 150A3	LAFB 150A3	LAFB 70A8	LAFB 70A8	LAFB 80A6	LAFB 50A8	LAFB 60A8	LAFB 60A8

[4] Electric Heat Control module only for use with 45 kW or more of electric heat.
[5] Only for use with electric heat.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

30 TON HIGH EFFICIENCY (R-410A) **360H4**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Compressors (4)	Rated Load Amps (total)		25 (100)			12.2 (48.8)			9 (36)		
	Locked Rotor Amps (total)		164 (656)			100 (400)			78 (312)		
Outdoor Fan Motors (6)	Full Load Amps (total)		2.4 (14.4)			1.3 (7.8)			1 (6)		
	Locked Rotor Amps (total)		4.7 (28.2)			2.4 (14.4)			1.9 (11.4)		
Standard PEF (3)	Horsepower (W)		1/3 (249)			1/3 (249)			1/3 (249)		
	Full Load Amps(total)		7.2			3.9			3		
	Locked Rotor Amps(total)		14.1			7.2			5.7		
50% High Static PEF (2)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (15)			3.4 (6.8)			2.7 (5.4)		
	Locked Rotor Amps(total)		69.4 (138.8)			31.4 (62.8)			20.1 (40.2)		
100% High Static PEF (3)	Horsepower (W)		2 (1491)			2 (1491)			2 (1491)		
	Full Load Amps(total)		7.5 (22.5)			3.4 (10.2)			2.7 (8.1)		
	Locked Rotor Amps(total)		69.4 (208.2)			31.4 (94.2)			20.1 (60.3)		
Service Outlet 115V GFI			15 Amps			15 Amps			15 Amps		
Indoor Blower Motor	Horsepower		**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
	Full Load Amps		16.7	24.2	30.8	7.6	11	14	6.1	9	11
	Locked Rotor Amps		105	152	193	45.6	66	84	36.6	54	66
[1] **Minimum Circuit Ampacity**	with Standard PEF	**0 kW**	145	153	159	72	75	78	54	57	59
		30 kW	145	153	159	72	75	78	54	57	59
		45 kW	166	175	183	82	87	90	66	70	72
		60 kW	175	184	192	87	91	95	70	73	76
		90 kW	247	256	264	123	127	131	98	102	105
		120 kW	319	328	337	159	163	167	127	131	133
	with 50% High Static PEF	**0 kW**	153	160	167	75	78	81	56	59	61
		15 kW	153	160	167	75	78	81	56	59	61
		30 kW	175	185	193	86	90	94	69	73	75
		45 kW	184	194	202	91	95	99	73	76	79
		60 kW	257	266	274	127	131	135	101	105	108
		120 kW	329	338	346	163	167	171	130	134	136
	with 100% High Static PEF	**0 kW**	160	168	174	78	81	84	59	62	64
		15 kW	160	168	174	78	81	84	59	62	64
		30 kW	185	194	202	90	95	98	72	76	78
		45 kW	194	203	211	95	99	103	76	80	82
		60 kW	266	275	284	131	135	139	105	108	111
		120 kW	338	348	356	167	171	175	134	137	140
	without power exhaust		138	145	152	68	71	74	51	54	56
[2] **Maximum Overcurrent Protection**	with Standard PEF	**0 kW**	150	175	175	80	80	90	60	60	60
		30 kW	150	175	175	80	80	90	60	60	60
		45 kW	175	175	200	90	90	90	70	70	80
		60 kW	175	200	200	90	100	100	70	80	80
		90 kW	250	[3] 300	[3] 300	125	150	150	100	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 50% High Static PEF	**0 kW**	175	175	175	80	80	90	60	60	70
		30 kW	175	175	175	80	80	90	60	60	70
		45 kW	175	200	200	90	90	100	70	80	80
		60 kW	200	200	225	100	100	100	80	80	80
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	110
		120 kW	[3] 350	[3] 350	[3] 350	175	175	175	150	150	150
	with 100% High Static PEF	**0 kW**	175	175	200	80	90	90	60	70	70
		30 kW	175	175	200	80	90	90	60	70	70
		45 kW	200	200	225	90	100	100	80	80	80
		60 kW	200	225	225	100	100	110	80	80	90
		90 kW	[3] 300	[3] 300	[3] 300	150	150	150	110	110	125
		120 kW	[3] 350	[3] 350	[3] 400	175	175	175	150	150	150
	without power exhaust		150	150	175	70	80	80	60	60	60

NOTE - Extremes of operating range are plus and minus 10% of line voltage.

1 Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

2 HACR type breaker or fuse.

3 Factory installed circuit breaker not available.

ELECTRICAL/ELECTRIC HEAT DATA LGC/LCC

30 TON HIGH EFFICIENCY (R-410A) **360H4**

Voltage - 60hz - 3 phase			**208/230V**			**460V**			**575V**		
Indoor Blower Motor Horsepower			**5**	**7.5**	**10**	**5**	**7.5**	**10**	**5**	**7.5**	**10**
[4] Electric Heat Control Kit			**15K13**			**15K92**			**15K93**		
Disconnect	with Standard PEF	**0 kW**	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		30 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**
	with 50% High Static PEF	**0 kW**	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		30 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M15**
	with 100% High Static PEF	**0 kW**	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		30 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		45 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
		60 kW	**84M15**	**84M15**	**84M15**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**	**84M14**
		90 kW	N/A	N/A	N/A	**84M14**	**84M14**	**84M15**	**84M14**	**84M14**	**84M14**
		120 kW	N/A	N/A	N/A	**84M15**	**84M15**	**84M15**	**84M14**	**84M15**	**84M15**
	without power exhaust		**84M15**	**84M15**	**84M15**	**84M13**	**84M14**	**84M14**	**84M13**	**84M13**	**84M13**
Terminal Block	with Standard PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-175	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 50% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-175	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	with 100% High Static PEF	**0 kW**	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		30 kW	LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
		45 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		60 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		90 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
		120 kW	LTB2-335	LTB2-335	LTB2-335	LTB2-175			LTB2-175		
	without power exhaust		LTB2-175	LTB2-175	LTB2-175	LTB2-175			LTB2-175		
Unit Fuse Block	with Standard PEF		LAFB 150A3	LAFB 175A3	LAFB 175A3	LAFB 80A6	LAFB 80A6	LAFB 90A6	LAFB 60A8	LAFB 60A8	LAFB 60A8
	with 50% High Static PEF		LAFB 175A3	LAFB 175A3	LAFB 175A3	LAFB 80A6	LAFB 80A6	LAFB 90A6	LAFB 60A8	LAFB 60A8	LAFB 70A8
	with 100% High Static PEF		LAFB 175A3	LAFB 175A3	LAFB 175A3	LAFB 80A6	LAFB 90A6	LAFB 90A6	LAFB 60A8	LAFB 70A8	LAFB 70A8
	without power exhaust		LAFB 150A3	LAFB 150A3	LAFB 175A3	LAFB 70A8	LAFB 80A6	LAFB 80A6	LAFB 60A8	LAFB 60A8	LAFB 60A8

[4] Electric Heat Control module only for use with 45 kW or more of electric heat.
[5] Only for use with electric heat.

OPTIONS/ACCESSORIES

Item		248	300H	360
COOLING SYSTEM				
Condensate Drain Trap	PVC - LTACDKP09/36	⊗	⊗	⊗
	Copper - LTACDKC09/36	⊗	⊗	⊗
Corrosion Protection		○	○	○
Efficiency	High	○	○	○
Refrigerant Type	R-22	○	○	○
	R-410A	○	○	○
Service Valves		○	○	○
Stainless Steel Condensate Drain Pan		○	○	○
HEATING SYSTEM				
Combustion Air Intake Extensions	LTACAIK10/15	[1]**x**	[1]**x**	[1]**x**
Gas Heat Input	Standard - 260 kBtuh input	○	○	○
	Medium - 360 kBtuh input	○	○	○
	High - 480 kBtuh input	○	○	○
LPG/Propane Conversion Kits	260 (2 kits) kBtuh input **-** LTALPGK-260	[1]**x**	[1]**x**	[1]**x**
	360 (2 kits) kBtuh input **-** LTALPGK-360	[1]**x**	[1]**x**	[1]**x**
	480 (2 kits) kBtuh input **-** LTALPGK-480	[1]**x**	[1]**x**	[1]**x**
Stainless Steel Heat Exchanger		○	○	○
Vertical Vent Extension	LTAWEK10/15	[1]**x**	[1]**x**	[1]**x**
AIR FILTERS				
MERV 11 High Efficiency	20 x 20 x 2 order 12 per unit - **97L88**	⊗	⊗	⊗
Blower – SUPPLY AIR				
	5 hp Standard or High Efficiency	○	○	○
	7.5 hp Standard or High Efficiency	○	○	○
	10 hp Standard or High Efficiency	○	○	○
Variable Air Volume with Variable Frequency Drive	5 hp [2] Standard or High Efficiency	○	○	○
	7.5 hp [2] Standard or High Efficiency	○	○	○
	10 hp [2] Standard or High Efficiency	○	○	○
	Supply VFD Blower Bypass (VAV units w/VFD only)	○	○	○
CABINET				
Coil Guards	**88K53**	**x**	**x**	**x**
Grille Guards	**86K30**	**x**	**x**	**x**
Hail Guards	**88K26**	**x**	**x**	**x**
Horizontal Return Air Panel Kit	**38K48**	**x**	**x**	**x**
CONTROLS				
Blower Proving Switch	LTABPSK	⊗	⊗	⊗
Commercial Controls	L Connection® Building Automation System	⊗	⊗	⊗
	Novar® ETM-2051 Unit Controller	⊗	⊗	⊗
	Sectra™ Zoning Sytem with VFD Control	⊗	⊗	⊗
	Sectra™ Zoning Sytem with Bypass Control	⊗	⊗	⊗
	Sectra™ Zoning Sytem Single Zone Control	⊗	⊗	⊗
Dehumidistat - Supermarket reheat only	**65F86**	**x**	**x**	**x**
Dirty Filter Switch	LTADFSK	⊗	⊗	⊗
Discharge Air Temperature Sensor		○	○	○
Fresh Air Tempering	**45L78**	⊗	⊗	⊗
Smoke Detector - Supply	Supply - LTASASDK10/36	⊗	⊗	⊗
	Return - LTARASDK10/30	⊗	⊗	⊗
Supply Static Limit Switch	Switch - C0SNSR11AE1	**x**	**x**	**x**
	Mounting Kit	**x**	**x**	**x**
Supply Static Transducer	C0SNSR20AE1	**x**	**x**	**x**
Indoor Air Quality (Co_2) Sensors				
CO_2 Sensor Duct Mounting Kit	LTIAQSDMK03/36	**x**	**x**	**x**
Sensor - white case CO_2 display	LTAIAQSWDK03/36	**x**	**x**	**x**
Sensor - white case no display	LTAIAQSWN03/36	**x**	**x**	**x**
Sensor - black case CO_2 display	LTAIAQSND03/36	**x**	**x**	**x**
Sensor - black case, no display	LTAIAQSDMBN03/36	**x**	**x**	**x**
Aspiration Box for duct mounting	LTIAQABD03/36	**x**	**x**	**x**
Handheld CO_2 Monitor	LTAIAQSHM03/36	**x**	**x**	**x**

NOTE - The catalog and part numbers that appear here are for ordering field installed accessories only.
⊗ - Field Installed or Configure to Order (factory installed) ○ - Configure to Order (Factory Installed) **X** - Field Installed.
[2] 575V models are available with high efficiency motors only.

OPTIONS/ACCESSORIES

Item			248	300H	360
ELECTRICAL					
Voltage		208/230V - 3 phase	○	○	○
60 hz		460V - 3 phase	○	○	○
		575V - 3 phase	○	○	○
HACR Circuit Breakers			○	○	○
Disconnect Switch		See Electrical / Electric Heat Tables for selection	⊗	⊗	⊗
GFI Service Outlets		LTAGFIK10/15	⊗	⊗	⊗
ELECTRIC HEAT ACCESSORIES/OPTIONS – See Electrical / Electric Heat Tables for selection					
		LTB2 Terminal Block	⊗	⊗	⊗
		Electric Heat Control Module	⊗	⊗	⊗
		Unit Fuse Block	⊗	⊗	⊗
ELECTRIC HEAT					
30 kW		order one each - EHA360-15 & EHA360S-15	⊗	⊗	⊗
45 kW		order two each - EHA360-22.5	⊗	⊗	⊗
60 kW		order two each - EHA150-30	⊗	⊗	⊗
90 kW		order two each - EHA150-45	⊗	⊗	⊗
120 kW		order two each - EHA150-60	⊗	⊗	⊗
ECONOMIZER					
Economizer					
Economizer (Order Hood Separately)		LAREMD30/36	⊗	⊗	⊗
Economizer Controls					
Differential Enthalpy		C1SNSR07AE	⊗	⊗	⊗
Single Enthalpy		C1SNSR06AE	⊗	⊗	⊗
Global, Enthalpy		Sensor Field Provided	○	○	○
Differential Sensible		Factory setting	○	○	○
Barometric Relief					
Down-Flow Barometric Relief Dampers (Order Hood Separately)		LAGED30/36	⊗	⊗	⊗
Hood for Down-Flow LAGED		LAGEH30H/36	⊗	⊗	⊗
Horizontal Barometric Relief Dampers (Hood Furnished)		LAGEDH30/36	⊗	⊗	⊗
OUTDOOR AIR					
Outdoor Air Dampers					
Damper Section (down-flow) - Motorized (Order Hood Separately)		LAOADM30/36	⊗	⊗	⊗
Damper Section (down-flow) - Manual (Order Hood Separately)		LAOAD30/36	⊗	⊗	⊗
Outdoor Air Hoods					
Outdoor Air Hood (down-flow) Number of Filters - 16 x 25 x 1 in. (406 x 635 x 25 mm)		LAOAH30/36 (5)	⊗	⊗	⊗
Power Exhaust					
Standard		208/230V - LAPEF30/36	⊗	⊗	⊗
Static		460V - LAPEF30/36	⊗	⊗	⊗
		575V - LAPEF30/36	⊗	⊗	⊗
[1] High Static	50%	208/230V - LAPEB30/36DY	⊗	⊗	⊗
		460V - LAPEB30/36DG	⊗	⊗	⊗
		575V - LAPEB30/36DJ	⊗	⊗	⊗
	100%	208/230V - LAPEB30/36EY	⊗	⊗	⊗
		460V - LAPEB30/36EG	⊗	⊗	⊗
		575V - LAPEB30/36EJ	⊗	⊗	⊗
	100% with VFD	208/230V - LAPEV30/36EG	⊗	⊗	⊗
		460V - LAPEV30/36EG	⊗	⊗	⊗
		575V - LAPEV30/36EJ	⊗	⊗	⊗
	100% with VFD and Bypass	208/230V - LAPEV30/36FY	⊗	⊗	⊗
		460V - LAPEV30/36FG	⊗	⊗	⊗
		575V - LAPEV30/36FJ	⊗	⊗	⊗

NOTE - The catalog and part numbers that appear here are for ordering field installed accessories only.

⊗ - Field Installed or Configure to Order (factory installed)

○ - Configure to Order (Factory Installed)

X - Field Installed.

[1] High Static Power Exhaust is field installed but must be ordered at the same time as the rooftop unit so that the unit can be factory configured for this option.

OPTIONS/ACCESSORIES

Item		248	300H	360
ROOF CURBS – CLIPLOCK 1000				
Down-Flow				
14 in. (356 mm) height	LARMF30/36S-14	x	x	x
18 in. (457 mm) height	LARMF30/36S-18	x	x	x
24 in. (610 mm) height	LARMF30/36S-24	x	x	x
Horizontal				
30 in. (762 mm) height	LARMFH30/36S-30	x	x	x
41 in. (1041 mm) height	LARMFH30/36S-41	x	x	x
ROOF CURBS – STANDARD				
Down-Flow				
14 in. (356 mm) height	LARMF18/36-14	x	x	x
24 in. (610 m) height	LARMF18/36-24	x	x	x
Horizontal				
30 in. (762 mm) height	LARMFH30/36-30	x	x	x
41 in. (1041 mm) height	LARMFH30/36-41	x	x	x
Insulation Kits				
for LARMFH30/36-30	**73K33**	x	x	x
for LARMFH30/36-41	**73K35**	x	x	x
CEILING DIFFUSERS				
Step-Down - Order one	LARTD30/36S or LARTD30/36	x	x	x
Flush - Order one	LAFD30/36S or LAFD30/36	x	x	x
Transitions (Supply and Return) Order one	LASRT30/36S or LASRT30/36	x	x	x

NOTE - The catalog and part numbers that appear here are for ordering field installed accessories only.
X - Field Installed.

OPTIONAL ELECTRIC HEAT ACCESSORIES

ELECTRIC HEAT CONTROL MODULE AND UNIT FUSE BLOCKS

			Unit Model No.	156H	180S	180H R-22	180H R-410A	210S	210H	240S	240H R-22	240H R-410A	300S	248H R-22	248H R-410A	300H	360H R-22	360H R-410A
Electric Heat			Electric Heat Model No.	EHA (see Electric Heat Data tables for additional information)														
			kW Input Range	15-30-45-60				15-30-45-60-90						30-45-60-90-120				
Electric Heat Control Module				**For 45 - 120 kW - 15K13** (208/230V), **15K92** (460V), **15K93** (575V)														
Unit Fuse Block	**With Power Exhaust Fans**	2 hp	208/230V	**56K95**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			460V	**25K10**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			575V	**25K08**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
		3 hp	208/230V	**56K96**	**25K15**	**25K15**	**25K18**	**25K17**	**25K17**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			460V	**25K10**	**25K10**	**25K13**	**25K13**	**25K11**	**25K11**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			575V	**25K08**	**25K09**	**25K10**	**25K10**	**25K10**	**25K09**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
		5 hp	208/230V	**25K15**	**25K15**	**25K17**	**25K18**	**25K18**	**25K18**	**25K18**	**25K18**	**25K19**	**25K19**	**25K19**	**25K19**	**25K19**	**35K01**	**35K02**
			460V	**25K11**	**25K11**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**35K04**	**48L63**
			575V	**25K09**	**25K09**	**25K10**	**25K10**	**25K10**	**25K10**	**25K10**	**25K11**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K14**	**25K14**
		7.5 hp	208/230V	- - -	**25K18**	**25K18**	**25K19**	**25K19**	**25K19**	**25K19**	**25K19**	**35K01**	**25K19**	**25K19**	**25K19**	**25K19**	**35K01**	**35K02**
			460V	- - -	**25K13**	**25K13**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**35K03**	**25K14**	**35K03**	**35K03**	**35K03**	**35K04**	**48L63**
			575V	- - -	**25K10**	**25K11**	**25K11**	**25K11**	**25K11**	**25K11**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K14**	**25K14**
		10 hp	208/230V	- - -	- - -	- - -	- - -	- - -	- - -	**25K19**	**35K01**	**35K01**	**25K01**	**35K01**	**35K01**	**35K01**	**35K02**	**35K02**
			460V	- - -	- - -	- - -	- - -	- - -	- - -	**25K14**	**35K03**	**35K03**	**35K03**	**35K03**	**35K03**	**35K03**	**48L63**	**70M67**
			575V	- - -	- - -	- - -	- - -	- - -	- - -	**25K13**	**25K13**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**35K03**	**25K14**
	Without Power Exhaust Fans	2 hp	208/230V	**56K95**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			460V	**25K09**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			575V	**56K52**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
		3 hp	208/230V	**56K96**	**56K96**	**25K15**	**25K17**	**25K15**	**25K15**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			460V	**25K10**	**25K10**	**25K11**	**25K13**	**25K11**	**25K11**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
			575V	**56K52**	**25K08**	**25K09**	**25K10**	**25K09**	**25K08**	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
		5 hp	208/230V	**25K15**	**25K15**	**25K15**	**25K18**	**25K17**	**25K17**	**25K17**	**25K18**	**25K19**	**25K19**	**25K18**	**25K19**	**25K19**	**35K01**	**35K01**
			460V	**25K10**	**25K10**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**35K04**	**48L63**
			575V	**25K08**	**25K09**	**25K10**	**25K10**	**25K10**	**25K09**	**25K10**	**25K11**	**25K13**	**25K11**	**25K11**	**25K11**	**25K13**	**25K14**	**25K14**
		7.5 hp	208/230V	- - -	**25K18**	**25K18**	**25K19**	**25K18**	**25K18**	**25K19**	**25K19**	**25K19**	**25K19**	**25K19**	**25K19**	**25K19**	**35K01**	**35K02**
			460V	- - -	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**25K14**	**35K04**	**48L63**
			575V	- - -	**25K10**	**25K11**	**25K11**	**25K11**	**25K10**	**25K11**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K14**	**25K14**
		10 hp	208/230V	- - -	- - -	- - -	- - -	- - -	- - -	**25K19**	**25K19**	**35K01**	**35K01**	**35K01**	**35K01**	**25K19**	**35K01**	**35K02**
			460V	- - -	- - -	- - -	- - -	- - -	- - -	**25K14**	**35K03**	**35K03**	**35K03**	**35K03**	**35K03**	**35K03**	**35K04**	**48L63**
			575V	- - -	- - -	- - -	- - -	- - -	- - -	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K13**	**25K14**	**25K14**

LTB2 ELECTRIC HEAT TERMINAL BLOCK - LTB2-175 **(30K75)** 175 amps, LTB2-335 **(30K76)** 335 amps
(Required For Units Without Disconnect/Circuit Breaker But With Single Point Power Source)

			Unit Model No.	156H	180S	180H R-22	180H R-410A	210S	210H	240S	240H R-22	240H R-410A	300S	248H R-22	248H R-410A	300H	360H R-22	360H R-410A
15 kW	All hp	208/230V		**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	- - -	- - -	- - -	- - -	- - -
30 kW	All hp	208/230V		**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**
45 kW	2 to 7.5 hp	208/230V		**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**
	10 hp	208/230V		- - -	- - -	- - -	- - -	- - -	- - -	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**
60 kW	2 to 5 hp	208/230V		**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**
	7.5 to 10 hp	208/230V		- - -	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**
90 kW	All hp	208/230V		- - -	- - -	- - -	- - -	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**
120 kW	all hp	208/230V		- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**

NOTE - All 460v and 575v models use 30K75 terminal block.

NOTE - Terminal Block is factory installed in units with factory installed electric heat without disconnect/circuit breaker but with single point power source.

BLOWER DATA-BASE UNIT

BLOWER TABLE INCLUDES RESISTANCE FOR <u>BASE UNIT ONLY</u> WITH DRY INDOOR COIL & AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Wet indoor coil air resistance of selected unit.
2 - Any factory installed options air resistance (heat section, economizer, etc.)
3 - Any field installed accessories air resistance (duct resistance, diffuser, etc.)

Then determine from blower table blower motor output and drive required.

See page 28 for wet coil and option/accessory air resistance data.
See page 28 for factory installed drive kit specifications.

BOLD INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	TOTAL STATIC PRESSURE — Inches Water Gauge (Pa)																			
	.20 (50)		.40 (100)		.60 (150)		.80 (200)		1.00 (250)		1.20 (300)		1.40 (350)		1.60 (400)		1.80 (450)		2.00 (495)		2.20 (545)		2.40 (595)		2.60 (645)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
6000 (2830)	- - -		**435**	**1.20 (0.90)**	**525**	**1.45 (1.08)**	570	1.60 (1.19)	630	2.00 (1.49)	700	2.35 (1.75)	750	2.80 (2.09)	795	3.15 (2.35)	840	3.40 (2.54)	880	3.80 (2.83)	920	4.20 (3.13)	960	4.65 (3.47)	995	5.10 (3.80)
6500 (3065)	- - -		**445**	**1.30 (0.97)**	**530**	**1.60 (1.19)**	580	1.80 (1.34)	640	2.20 (1.64)	705	2.60 (1.94)	755	3.05 (2.28)	800	3.40 (2.54)	845	3.70 (2.76)	885	4.15 (3.10)	925	4.60 (4.43)	965	5.00 (3.73)	1000	5.45 (4.07)
7000 (3305)	- - -		**455**	**1.40 (1.04)**	**535**	**1.75 (1.31)**	590	2.05 (1.53)	650	2.45 (1.83)	710	2.85 (2.13)	760	3.30 (2.46)	805	3.70 (2.76)	850	4.05 (3.02)	890	4.50 (3.36)	930	4.95 (3.69)	970	5.40 (4.03)	1005	5.85 (4.36)
7500 (3540)	**380**	**1.05 (0.78)**	**465**	**1.50 (1.12)**	**540**	**1.90 (1.42)**	600	2.30 (1.72)	660	2.70 (2.01)	715	3.15 (2.35)	765	3.60 (2.69)	810	4.00 (2.98)	855	4.45 (3.32)	895	4.90 (3.66)	935	5.35 (3.99)	975	5.85 (4.36)	1010	6.30 (4.70)
8000 (3775)	**390**	**1.25 (0.93)**	**475**	**1.65 (1.23)**	**545**	**2.10 (1.57)**	610	2.55 (1.90)	665	2.95 (2.20)	720	3.45 (2.57)	770	3.90 (2.91)	815	4.35 (3.25)	860	4.85 (3.62)	900	5.30 (3.95)	940	5.75 (4.29)	980	6.30 (4.70)	1015	6.75 (5.04)
8500 (4010)	**405**	**1.40 (1.04)**	**485**	**1.90 (1.42)**	**555**	**2.35 (1.75)**	620	2.80 (2.09)	675	3.30 (2.46)	725	3.75 (2.80)	775	4.20 (3.13)	820	4.70 (3.51)	865	5.20 (3.88)	905	5.70 (4.25)	945	6.20 (4.63)	985	6.75 (5.04)	1020	7.25 (5.41)
9000 (4245)	**415**	**1.60 (1.19)**	**495**	**2.10 (1.57)**	565	2.60 (1.94)	625	3.10 (2.31)	685	3.60 (2.69)	735	4.10 (3.06)	785	4.60 (3.43)	830	5.10 (3.80)	870	5.60 (4.18)	915	6.15 (4.59)	955	6.70 (5.00)	990	7.20 (5.37)	1025	7.70 (5.74)
9500 (4485)	**430**	**1.85 (1.38)**	**505**	**2.35 (1.75)**	575	2.90 (2.16)	635	3.40 (2.54)	690	3.90 (2.91)	745	4.50 (3.36)	790	4.95 (3.69)	835	5.50 (4.10)	880	6.05 (4.51)	920	6.60 (4.92)	960	7.15 (5.33)	995	7.70 (5.74)	1035	8.30 (6.19)
10,000 (4720)	**445**	**2.10 (1.57)**	**520**	**2.65 (1.98)**	585	3.20 (2.39)	645	3.75 (2.80)	700	4.30 (3.21)	750	4.85 (6.49)	800	5.40 (4.03)	845	5.95 (4.44)	885	6.50 (4.85)	925	7.05 (5.26)	965	7.65 (5.71)	1000	8.20 (6.12)	1040	8.85 (6.60)
10,500 4955)	**455**	**2.35 (1.75)**	**530**	**2.95 (2.20)**	595	3.50 (2.61)	655	4.10 (3.06)	710	4.70 (3.03)	760	5.25 (3.92)	805	5.80 (4.33)	850	6.40 (4.77)	895	7.00 (5.22)	935	7.60 (5.67)	970	8.15 (608)	1010	8.80 (6.56)	1045	9.40 (7.01)
11,000 (5190)	**470**	**2.60 (1.94)**	**545**	**3.25 (2.42)**	605	3.85 (2.87)	665	4.45 (3.32)	720	5.10 (3.80)	765	5.66 (4.22)	815	6.30 (4.70)	860	6.90 (5.15)	900	7.50 (5.60)	940	8.10 (6.04)	980	8.75 (6.53)	1015	9.35 (6.98)	- - -	
11,500 (5425)	**485**	**2.95 (2.20)**	**555**	**3.60 (2.69)**	620	4.25 (3.17)	675	4.85 (3.62)	730	5.55 (4.14)	775	6.10 (4.55)	820	6.70 (5.00)	865	7.40 (5.52)	910	8.05 (6.01)	945	8.65 (6.45)	985	9.30 (6.94)	1020	9.95 (7.42)	- - -	
12,000 (5665)	**500**	**3.30 (2.46)**	570	4.00 (2.98)	630	4.65 (3.47)	685	5.30 (3.95)	740	6.00 (4.480	785	6.60 (4.92)	830	7.25 (5.41)	875	7.95 (5.93)	915	8.60 (6.42)	955	9.25 (6.90)	995	9.95 (7.42)	1030	10.60 (7.91)	- - -	
12,500 (5900)	**515**	**3.65 (2.72)**	580	4.35 (3.25)	640	5.05 (3.77)	695	5.75 (4.29)	750	6.50 (4.85)	795	7.10 (5.30)	840	7.80 (5.82)	885	8.55 (6.38)	925	9.20 (6.86)	965	9.90 (7.39)	1000	10.55 (7.87)	1035	11.25 (8.39)	- - -	
13,000 (6135)	**530**	**4.05 (3.02)**	595	4.80 (3.58)	655	5.55 (4.14)	710	6.25 (4.66)	760	7.00 (5.22)	805	7.65 (5.71)	850	8.40 (6.27)	890	9.05 (6.75)	930	9.75 (7.27)	970	10.50 (7.83)	1010	11.30 (8.43)	- - -		- - -	
13,500 (6370)	**545**	**4.45 (3.32)**	610	5.25 (3.92)	665	6.00 (4.48)	720	6.75 (5.04)	770	7.50 (5.60)	815	8.25 (6.15)	860	9.00 (6.71)	900	9.70 (7.24)	940	10.45 (7.80)	980	11.20 (8.36)	- - -		- - -		- - -	
14,000 (6605)	560	4.90 (3.66)	620	5.70 (4.25)	680	6.55 (4.89)	730	7.30 (5.45)	780	8.10 (6.04)	825	8.85 (6.60)	870	9.65 (7.20)	910	10.40 7.76)	950	11.15 (8.31)	- - -		- - -		- - -		- - -	
14,500 (6845)	575	5.40 (4.03)	635	6.25 (4.66)	690	7.05 (5.26)	745	7.90 (5.89)	790	8.65 (6.45)	835	9.45 (7.05)	880	10.30 (7.68)	920	11.10 (8.28)	- - -		- - -		- - -		- - -		- - -	
15,000 (7080)	590	5.90 (4.40)	650	6.80 (5.07)	705	7.65 (5.71)	755	8.50 (6.340	800	9.30 (6.94)	845	10.10 (7.53)	890	11.00 (8.21)	- - -		- - -		- - -		- - -		- - -		- - -	

BLOWER DATA

CAV FACTORY INSTALLED DRIVE KIT SPECIFICATIONS

Motor		RPM Range											
hp	kw	Drive 1		Drive 2		Drive 3		Drive 4		Drive 5		Drive 6	
		60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz
5	3.7	660/810	630/790	770/965	710/900	- - -	- - -	- - -	- - -	- - -	- - -	560/710	- - -
7.5	5.6	- - -	- - -	- - -	- - -	715/880	710/870	770/965	700/840	850/1045	830/980	- - -	- - -
10	7.5	- - -	- - -	- - -	- - -	715/880	710/870	770/965	700/840	850/1045	870/1020	- - -	- - -

In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

CAV MANUFACTURER'S NUMBERS (60 HZ)

Drive No.	DRIVE COMPONENTS							
	ADJUSTABLE SHEAVE		FIXED SHEAVE		BELTS		SPLIT BUSHING	
	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.
1	1VP56x1-1/8	P-8-1492	BK120Hx1-7/16	100788-07	BX71	31K9701	H -1 7/16	49M6201
2	1VP60x1-1/8	41C1301	BK110Hx1-7/16	100788-06	BX70	31K9601	H -1 7/16	49M6201
3 (7.5hp)	1VP65x1-3/8	78M7101	BK130Hx1-7/16	100788-08	BX75	31K9801	H -1 7/16	49M6201
3 (10hp)	1VP65x1-3/8	78M7101	1B5V124	78M8701	5VX780	78M5601	B -1 7/16	100246-01
4	1VP60x1-3/8	78L5501	BK110Hx1-7/16	100788-06	BX71	31K9701	H -1 7/16	49M6201
5	1VP62x1-3/8	78M7001	1B5V94	78M8501	5VX710	100245-22	B -1 7/16	100246-01
6	1VP50x1-1/8	P-8-1977	2K120Hx1-7/16	100788-07	BX70	31K9601	H -1 7/16	49M6201

CAV MANUFACTURER'S NUMBERS (50 HZ)

Drive No.	DRIVE COMPONENTS							
	ADJUSTABLE SHEAVE		FIXED SHEAVE		BELTS		SPLIT BUSHING	
	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.
1	1VP50x1-1/8	P-8-1977	BK90Hx1-7/16	100788-04	BX64	97J5801	H -1 7/16	49M6201
2	1VP50x1-1/8	P-8-1977	BK80Hx1-7/16	100788-03	BX63	97J5501	H -1 7/16	49M6201
3	1VP65x1-3/8	78M7101	BK110Hx1-7/16	100788-06	BX71	31K9701	H -1 7/16	49M6201
4	1VP62x1-3/8	78M7001	BK110Hx1-7/16	100788-06	BX71	31K9701	H -1 7/16	49M6201
5	1VP68x1-3/8	100239-04	BK100Hx1-7/16	100788-05	BX71	31K9701	H -1 7/16	49M6201

VFD DRIVE COMPONENT MANUFACTURER'S NUMBERS

Drive No.	DRIVE COMPONENTS									
	MOTOR PULLEY		BLOWER PULLEY		BELTS		MOTOR BUSHING		BLOWER BUSHING	
	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.	Supplier No.	OEM Part No.
7	BK62H	100788-01	BK110H	100788-06	BX70	31K9601	H-1-1/8	100073-01	H-1-7/16	49M6201
8	BK62H	100788-01	BK110H	100788-06	BX72	100245-14	H-1-3/8	100073-02	H-1-7/16	49M6201
9	1B5V68	78M8201	BK120H	100788-07	BX75	31K9801	B-1-3/8	79M0401	H-1-7/16	49M6201

VFD DRIVE KIT SPECIFICATIONS

Nominal hp	Nominal kW	Drive Kit Number	Maximum RPM @ 60Hz VFD Output (fixed pulley)
5	3.7	7	965
7.5	5.6	8	965
10	7.5	9	1045

BLOWER DATA

Air Volume		Wet Indoor Coil		Gas Heat Exchanger						Economizer		Horizontal Roof Curb		MERV 11 Filter	
				Standard Heat		Medium Heat		High Heat							
cfm	L/s	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa
6000	2830	.04	10	.12	30	.16	40	.19	47	.01	3	.08	20	.01	2
6500	3070	.05	13	.13	32	.18	45	.21	52	.01	3	.09	22	.01	2
7000	3305	.06	15	.14	35	.20	50	.24	59	.02	5	.10	25	.01	2
7500	3540	.07	17	.15	37	.21	52	.25	62	.02	5	.11	27	.02	5
8000	3775	.08	20	.17	42	.24	59	.28	70	.02	5	.13	32	.02	5
8500	4010	.08	20	.20	50	.27	67	.31	77	.03	7	.15	37	.02	5
9000	4245	.09	22	.22	55	.29	72	.34	85	.04	10	.17	42	.02	5
9500	4485	.10	25	.24	60	.32	80	.38	94	.04	10	.19	47	.03	7
10,000	4720	.11	27	.27	67	.36	90	.42	104	.05	12	.21	52	.03	7
10,500	4955	.12	30	.30	75	.40	99	.46	114	.06	15	.24	60	.03	7
11,000	5190	.12	30	.33	92	.43	107	.50	137	.07	17	.27	67	.04	10
11,500	5425	.13	32	.37	92	.48	119	.55	137	.08	20	.30	75	.04	10
12,000	5665	.14	35	.40	99	.52	129	.60	149	.10	25	.33	82	.04	10
12,500	5900	.15	37	.44	109	.57	142	.65	162	.11	27	.37	92	.05	12
13,000	6135	.16	40	.48	119	.61	152	.70	174	.13	32	.40	99	.05	12
13,500	6370	.17	42	.53	132	.67	167	.76	189	.14	35	.44	109	.06	15
14,000	6605	.18	45	.57	142	.72	179	.82	204	.16	40	.49	122	.06	15
14,500	6845	.19	47	.62	154	.78	194	.89	221	.18	45	.53	132	.06	15
15,000	7080	.20	50	.68	169	.84	209	.95	236	.21	52	.58	144	.07	17

BLOWER DATA

CEILING DIFFUSER AIR RESISTANCE

Air Volume		Step-Down Diffuser - LARTD30/36						Flush Diffuser - LAFD30/36	
		2 Ends Open		1 Side/2 Ends Open		All Ends & Sides Open			
cfm	L/s	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa
7500	3540	.37	92	.31	77	.25	62	.29	72
8000	3775	.42	104	.36	90	.29	72	.34	85
8500	4010	.48	119	.41	102	.34	85	.39	97
9000	4245	.55	137	.47	117	.39	97	.44	109
9500	4485	.62	154	.53	132	.45	112	.51	127
10,000	4720	.70	174	.60	149	.51	127	.57	142
10,500	4955	.78	194	.68	169	.58	144	.65	162
11,000	5190	.87	216	.76	190	.65	162	.72	179
11,500	5425	.97	241	.85	211	.73	182	.81	201
12,000	5665	1.08	269	.94	234	.82	204	.90	223
12,500	5900	1.19	296	1.04	259	.91	226	.99	246
13,000	6135	1.30	323	1.15	286	1.00	249	1.10	274
13,500	6370	1.43	356	1.26	313	1.10	374	1.20	298
14,000	6605	1.56	388	1.38	343	1.20	298	1.31	326
14,500	6845	1.69	420	1.50	373	1.31	326	1.43	356
15,000	7080	1.84	457	1.63	405	1.43	356	1.56	388

CEILING DIFFUSER AIR THROW DATA

Air Volume		[1] Effective Throw Range				Air Volume		[1] Effective Throw Range			
		Step-Down		Flush				Step-Down		Flush	
cfm	L/s	ft.	m	ft.	m	cfm	L/s	ft.	m	ft.	m
Diffuser Model		LARTD30/36		LAFD30/36		Diffuser Model		LARTD30/36		LAFD30/36	
9000	4245	40 - 47	12 - 14	29 - 35	8 - 11	11,500	5425	55 - 64	17 - 20	50 - 61	15 - 19
9500	4485	43 - 50	13 - 15	33 - 41	10 - 12	12,000	5665	58 - 67	18 - 20	54 - 66	16 - 20
10,000	4720	46 - 54	14 - 16	37 - 46	11 - 14	12,500	5900	61 - 71	19 - 22	58 - 71	18 - 22
10,500	4955	50 - 58	15 - 18	42 - 51	13 - 15	13,000	6135	64 - 74	20 - 23	62 - 75	19 - 23
11,000	4190	53 - 61	16 - 19	46 - 56	14 - 17	13,500	6370	67 - 77	20 - 23	66 - 79	20 - 24

[1] Throw is the horizontal or vertical distance an airstream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 50 ft. (15 m) per minute. Four sides open.

POWER EXHAUST FANS - STANDARD STATIC OPERATION

Return Duct Negative Static Pressure		Air Volume	
in. w.g.	Pa	cfm	L/s
0	0	12,800	6040
0.05	12	12,200	5760
0.10	25	11,500	5430
0.15	37	10,800	5100
0.20	50	9900	4670
0.25	62	9000	4250
0.30	75	7900	3730
0.35	87	6750	3190
0.40	100	5450	2570
0.45	112	4150	1960
0.50	125	2900	1370

BLOWER DATA

POWER EXHAUST FANS - 50% HIGH STATIC OPERATION

BOLD INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	Return Duct Negative Static Pressure - Inches Water Gauge (Pa)																			
	0 (0)		.10 (25)		.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.0 (250)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
4000 (1890)	**335**	**0.30 (0.22)**	**380**	**0.35 (0.26)**	430	0.40 (0.30)	475	0.45 (0.34)	520	0.50 (0.37)	570	0.55 (0.41)	615	0.65 (0.48)	665	0.70 (0.52)	710	0.75 (0.56)	755	0.85 (0.63)	- - -	
4500 (2125)	**375**	**0.40 (0.30)**	415	0.45 (0.34)	460	0.55 (0.41)	500	0.60 (0.45)	545	0.65 (0.48)	585	0.70 (0.52)	625	0.80 (0.60)	670	0.85 (0.63)	710	0.95 (0.71)	750	1.00 (0.75)	795	1.10 (0.82)
5000 (2360)	415	0.55 (0.41)	455	0.65 (0.48)	490	0.70 (0.52)	530	0.75 (0.56)	570	0.85 (0.63)	605	0.90 (0.67)	645	1.00 (0.75)	680	1.05 (0.78)	720	1.15 (0.86)	755	1.20 (0.90)	795	1.30 (0.97)
5500 (2595)	460	0.75 (0.56)	495	0.85 (0.63)	525	0.90 (0.67)	560	0.95 (0.71)	595	1.05 (0.78)	630	1.10 (0.82)	665	1.20 (0.90)	700	1.30 (0.97)	735	1.35 (1.01)	765	1.45 (1.08)	800	1.55 (1.16)
6000 (2830)	500	1.00 (0.75)	530	1.05 (0.78)	565	1.15 (0.86)	595	1.20 (0.90)	625	1.30 (0.97)	660	1.40 (1.04)	690	1.45 (1.08)	720	1.55 (1.16)	750	1.65 (1.23)	785	1.70 (1.27)	815	1.80 (1.34)
6500 (3065)	540	1.25 (0.93)	570	1.30 (0.97)	600	1.40 (1.04)	630	1.50 (1.12)	660	1.60 (1.19)	685	1.65 (1.23)	715	1.75 (1.31)	745	1.85 (1.38)	775	1.95 (1.45)	805	2.05 (1.53)	830	2.10 (1.57)
7000 (3305)	585	1.55 (1.16)	610	1.65 (1.23)	635	1.70 (1.27)	665	1.85 (1.38)	690	1.90 (1.42)	720	2.00 (1.49)	745	2.10 (1.57)	770	2.20 (1.64)	800	2.30 (1.72)	825	2.40 (1.79)	855	2.50 (1.87)
7500 (3540)	625	1.90 (1.42)	650	2.00 (1.49)	675	2.10 (1.57)	700	2.20 (1.64)	725	2.30 (1.72)	750	2.40 (1.79)	775	2.50 (1.87)	800	2.60 (1.94)	825	2.70 (2.01)	850	2.80 (2.09)	875	2.90 (2.16)
8000 (3775)	665	2.30 (1.72)	690	2.40 (1.79)	715	2.55 (1.90)	735	2.60 (1.94)	760	2.70 (2.01)	785	2.85 (2.13)	810	2.95 (2.20)	830	3.05 (2.28)	855	3.15 (2.35)	880	3.25 (2.42)	905	3.40 (2.54)
8500 (4010)	710	2.80 (2.09)	730	2.90 (2.16)	755	3.00 (2.24)	775	3.10 (2.31)	795	3.20 (2.39)	820	3.35 (2.50)	840	3.45 (2.57)	865	3.55 (2.65)	885	3.65 (2.72)	910	3.80 (2.83)	930	3.90 (2.91)

POWER EXHAUST FANS - 100% HIGH STATIC OPERATION

BOLD INDICATES FIELD FURNISHED DRIVE

Air Volume cfm (L/s)	Return Duct Negative Static Pressure - Inches Water Gauge (Pa)																			
	0 (0)		.10 (25)		.20 (50)		.30 (75)		.40 (100)		.50 (125)		.60 (150)		.70 (175)		.80 (200)		.90 (225)		1.0 (250)	
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)
8500 (4010)	475	1.30 (0.97)	500	1.30 (0.97)	525	1.40 (1.04)	550	1.50 (1.12)	585	1.60 (1.19)	625	1.75 (1.31)	670	1.90 (1.42)	710	2.10 (1.57)	745	2.30 (1.72)	780	2.50 (1.87)	815	2.70 (2.01)
9000 (4245)	520	1.55 (1.16)	535	1.60 (1.19)	550	1.65 (1.23)	570	1.70 (1.27)	605	1.85 (1.38)	640	1.95 (1.45)	685	2.15 (1.60)	720	2.35 (1.75)	760	2.55 (1.90)	790	2.75 (2.05)	825	3.00 (2.24)
9500 (4485)	550	1.80 (1.34)	560	1.85 (1.38)	575	1.90 (1.42)	600	2.00 (1.49)	620	2.10 (1.57)	655	2.20 (1.64)	695	2.40 (1.79)	735	2.60 (1.94)	770	2.80 (2.09)	800	3.00 (2.24)	835	3.25 (2.42)
10,000 (4720)	575	2.10 (1.57)	590	2.15 (1.60)	605	2.20 (1.64)	620	2.30 (1.72)	645	2.40 (1.79)	675	2.50 (1.87)	710	2.65 (1.98)	745	2.85 (2.13)	780	3.05 (2.28)	815	3.30 (2.46)	845	3.50 (2.61)
10,500 (4955)	605	2.45 (1.83)	615	2.45 (1.83)	625	2.50 (1.87)	645	2.60 (1.94)	670	2.75 (2.05)	690	2.80 (2.09)	725	3.00 (2.24)	755	3.15 (2.35)	790	3.35 (2.50)	825	3.60 (2.69)	855	3.80 (2.83)
11,000 (5190)	630	2.80 (2.09)	645	2.85 (2.13)	660	2.95 (2.20)	675	3.00 (2.24)	685	3.05 (2.28)	715	3.20 (2.39)	740	3.30 (2.46)	770	3.50 (2.61)	805	3.70 (2.76)	835	3.90 (2.91)	870	4.20 (3.13)
11,500 (5425)	665	3.25 (2.42)	675	3.30 (2.46)	680	3.30 (2.46)	695	3.40 (2.54)	715	3.50 (2.61)	735	3.60 (2.69)	755	3.70 (2.76)	785	3.85 (2.87)	815	4.05 (3.02)	850	4.30 (3.21)	880	4.50 (3.36)
12,000 (5665)	685	3.60 (2.69)	700	3.70 (2.76)	710	3.75 (2.80)	725	3.85 (2.87)	740	3.95 (2.95)	755	4.00 (2.98)	780	4.15 (3.10)	805	4.30 (3.21)	830	4.45 (3.32)	860	4.65 (3.47)	890	4.90 (3.66)
12,500 (5900)	720	4.10 (3.06)	730	4.20 (3.13)	740	4.25 (3.17)	750	4.30 (3.21)	765	4.40 (3.28)	780	4.50 (3.36)	800	4.60 (3.43)	820	4.75 (3.54)	845	4.90 (3.66)	875	5.10 (3.80)	905	5.35 (3.99)
13,000 (6135)	745	4.60 (3.43)	750	4.65 (3.47)	765	4.75 (3.54)	780	4.85 (3.62)	790	4.90 (3.66)	805	5.00 (3.73)	820	5.10 (3.80)	840	5.25 (3.92)	865	5.40 (4.03)	890	5.60 (4.18)	915	5.80 (4.33)
13,500 (6370)	775	5.15 (3.84)	785	5.25 (3.92)	795	5.35 (3.99)	805	5.40 (4.03)	815	5.50 (4.10)	830	5.60 (4.18)	845	5.70 (4.25)	865	5.80 (4.33)	880	5.95 (4.44)	905	6.10 (4.55)	930	6.30 (4.70)
14,000 (6605)	805	5.80 (4.33)	810	5.80 (4.33)	820	5.90 (4.40)	830	6.00 (4.48)	845	6.10 (4.55)	855	6.20 (4.63)	870	6.30 (4.70)	885	6.40 (4.77)	905	6.55 (4.89)	925	6.70 (5.00)	**945**	**6.85 (5.11)**

HIGH STATIC POWER EXHAUST FANS WITH CONSTANT AIR VOLUME - DRIVE KIT SPECIFICATIONS

Power Exhaust Fan Model No.	Motor HP	Drive Kit Number	RPM Range
LAPEB30/36A (50%)	(2) 2 hp	1	406 - 533
LAPEB30/36B (50%)	(2) 2 hp	2	531 - 731
LAPEB30/36C (50%)	(2) 2 hp	3	731 - 932
LAPEB30/36D (100%)	(3) 2 hp	1	406 - 533
LAPEB30/36E (100%)	(3) 2 hp	2	531 - 731
LAPEB30/36F (100%)	(3) 2 hp	3	731 - 932

NOTE - Using total air volume and system static pressure requirements, determine from blower performance tables rpm and required.

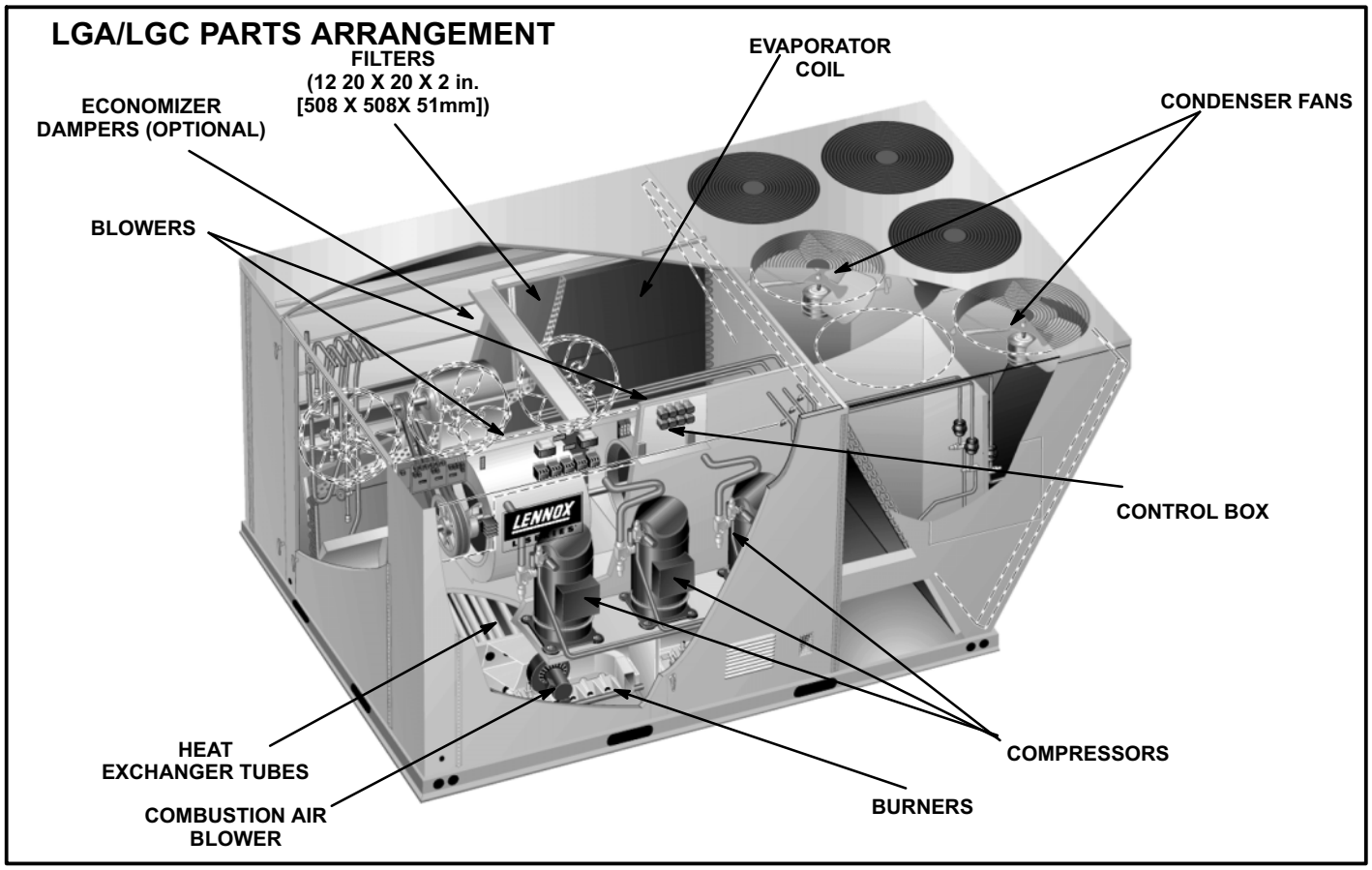


FIGURE 1

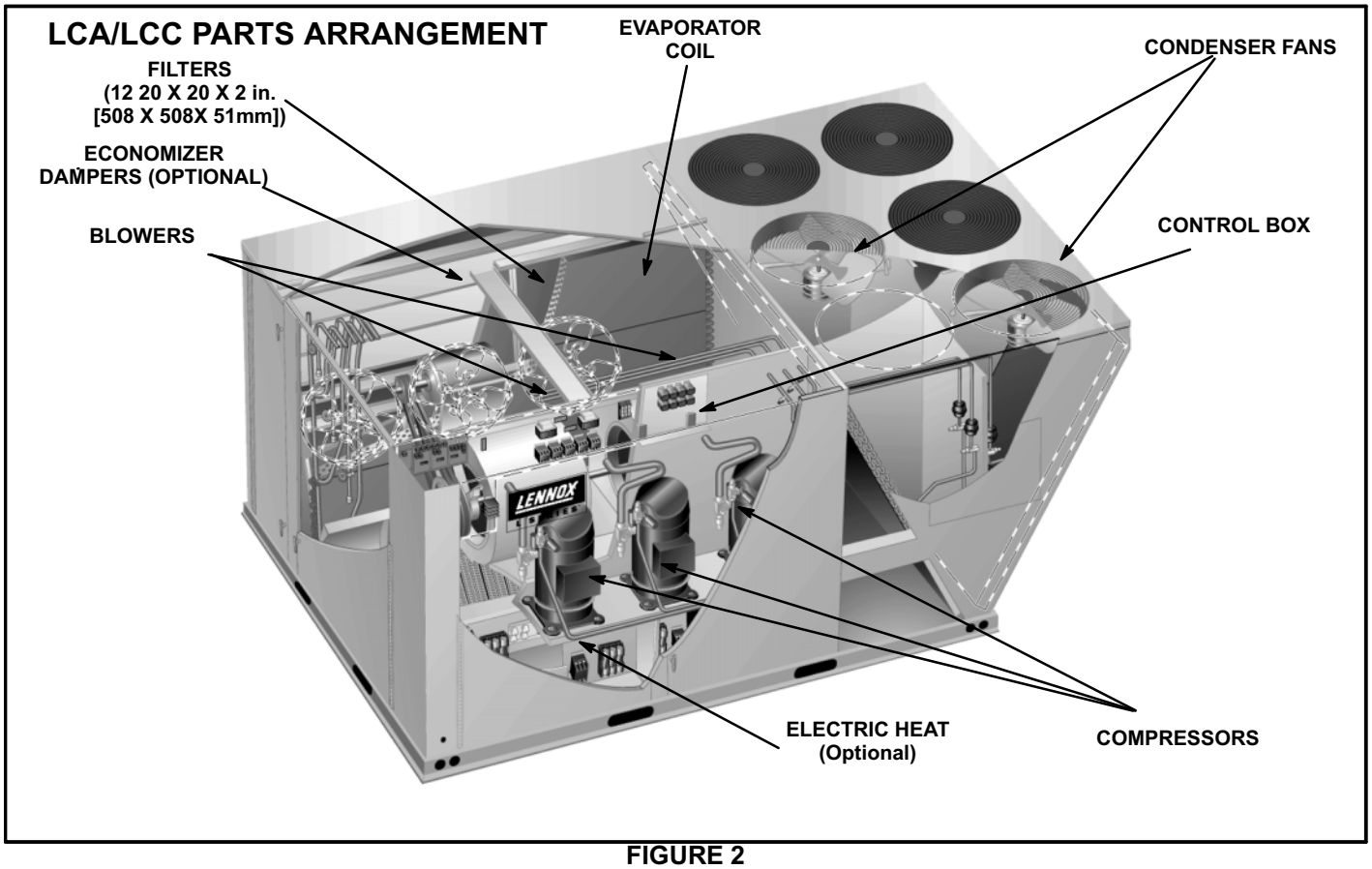


FIGURE 2

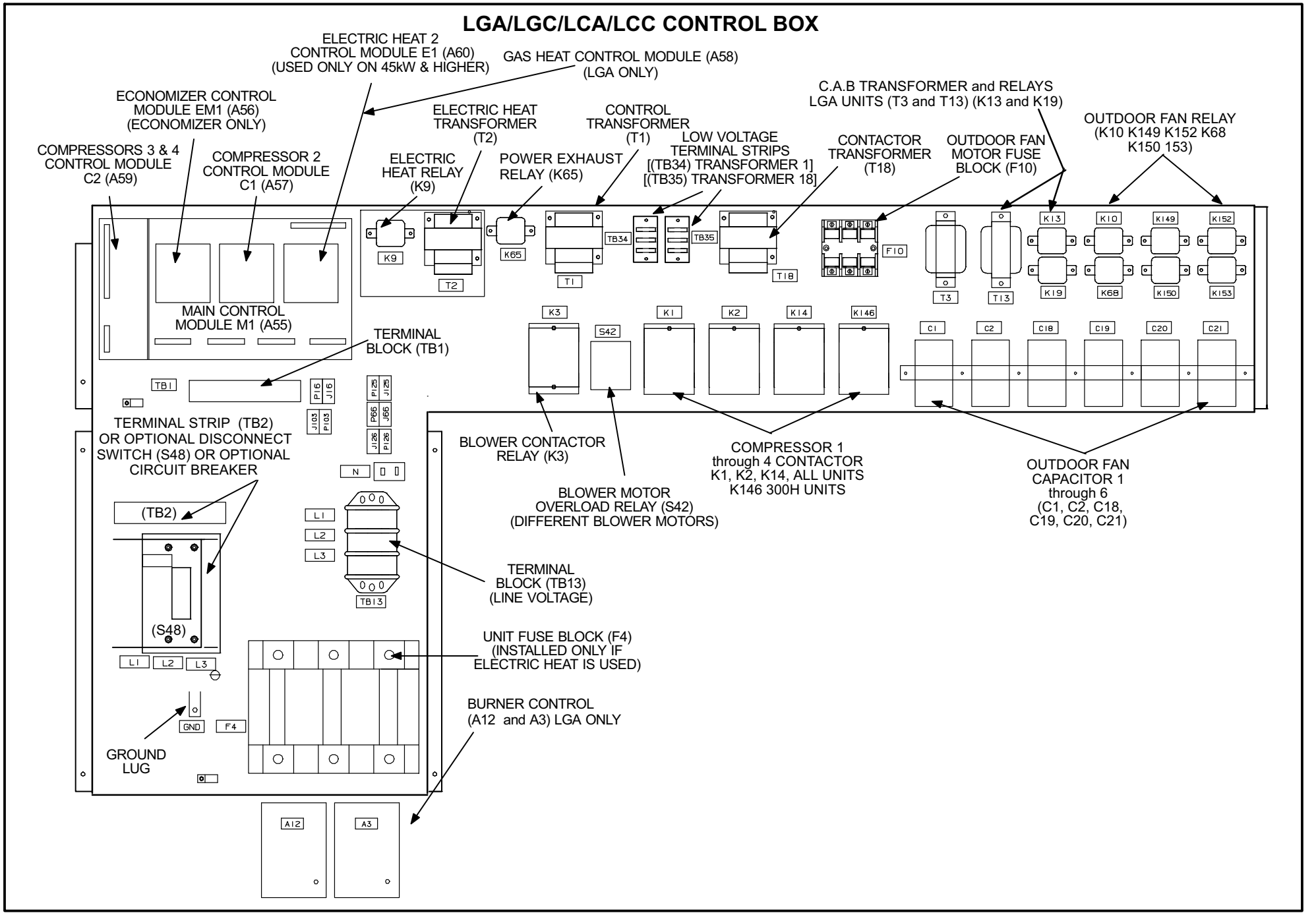

LGA/LGC/LCA/LCC CONTROL BOX
ELECTRIC HEAT 2
CONTROL MODULE E1 (A60)
(USED ONLY ON 45kW & HIGHER)
GAS HEAT CONTROL MODULE (A58)
(LGA ONLY)
ECONOMIZER CONTROL
MODULE EM1 (A56)
(ECONOMIZER ONLY)
COMPRESSORS 3 & 4
CONTROL MODULE
C2 (A59)
COMPRESSOR 2
CONTROL MODULE
C1 (A57)
ELECTRIC HEAT
TRANSFORMER
(T2)
ELECTRIC
HEAT RELAY
(K9)
POWER EXHAUST
RELAY (K65)
CONTROL
TRANSFORMER
(T1)
LOW VOLTAGE
TERMINAL STRIPS
[(TB34) TRANSFORMER 1]
[(TB35) TRANSFORMER 18]
CONTACTOR
TRANSFORMER
(T18)
C.A.B TRANSFORMER and RELAYS
LGA UNITS (T3 and T13) (K13 and K19)
OUTDOOR FAN
MOTOR FUSE
BLOCK (F10)
OUTDOOR FAN RELAY
(K10 K149 K152 K68
K150 153)
MAIN CONTROL
MODULE M1 (A55)
TERMINAL
BLOCK (TB1)
TERMINAL STRIP (TB2)
OR OPTIONAL DISCONNECT
SWITCH (S48) OR OPTIONAL
CIRCUIT BREAKER
BLOWER CONTACTOR
RELAY (K3)
BLOWER MOTOR
OVERLOAD RELAY (S42)
(DIFFERENT BLOWER MOTORS)
COMPRESSOR 1
through 4 CONTACTOR
K1, K2, K14, ALL UNITS
K146 300H UNITS
OUTDOOR FAN
CAPACITOR 1
through 6
(C1, C2, C18,
C19, C20, C21)
TERMINAL
BLOCK (TB13)
(LINE VOLTAGE)
UNIT FUSE BLOCK (F4)
(INSTALLED ONLY IF
ELECTRIC HEAT IS USED)
BURNER CONTROL
(A12 and A3) LGA ONLY
GROUND
LUG
K9
K65
T2
T1
TB34
TB35
T18
F10
T3
T13
K13
K10
K149
K152
K19
K68
K150
K153
K3
S42
K1
K2
K14
K146
C1
C2
C18
C19
C20
C21
TB1
P16
J16
J103
P103
P125
J125
P66
J66
J126
P126
N
(TB2)
L1
L2
L3
TB13
(S48)
GND
F4
A12
A3

FIGURE 3

I-UNIT COMPONENTS

ELECTROSTATIC DISCHARGE (ESD)
Precautions and Procedures

⚠ CAUTION

Electrostatic discharge can affect electronic components. Take precautions during furnace installation and service to protect the furnace's electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the furnace, the control and the technician at the same electrostatic potential. Neutralize electrostatic charge by touching hand and all tools on an unpainted unit surface, such as the gas valve or blower deck, before performing any service procedure.

LGA /LGC/LCA/LCC 21, 25 and 30 ton (74, 88 and 105 kW) units are configure to order units (CTO). Unit components are shown in figures 1 and 2. All units come standard with hinged unit panels. The unit panels may be held open with the door rod located inside the unit. All L1, L2, and L3 wiring is color coded; L1 is red, L2 is yellow, and L3 is blue.

A-Control Box Components

Control box components are shown in figure 3, The control box is located in the upper left portion of the compressor compartment.

1-Disconnect Switch S48 (Optional all units)

All units may be equipped with an optional disconnect switch S48. Other factory or field installed optional circuit breakers may be used, such as CB10. S48 and CB10 are toggle switches, which can be used by the service technician to disconnect power to the unit.

2-Control Transformer T1 (all units)

All units use a single line voltage to 24VAC transformer mounted in the control box. Transformer supplies power to control circuits in the unit. The transformer is rated at 70VA and is protected by a 3.5 amp circuit breaker (CB8). The 208/230 (Y) voltage transformers use two primary voltage taps as shown in figure 4, while 460 (G) and 575 (J) voltage transformers use a single primary voltage tap. Units will be factory wired for 230V (orange and black). 208V (red and black) applications should be re-wired in the field.

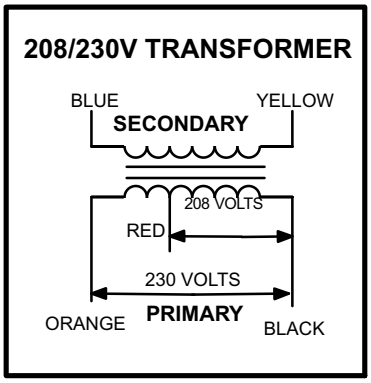


FIGURE 4

3-Contactor Transformer T18

T18 is a single line voltage to 24VAC transformer used in all units. Transformer T18 is protected by a 3.5 amp circuit breaker (CB18). T18 is identical to transformer T1. The transformer supplies 24VAC power to the contactors.

4-C. A. B. Transformers T3 & T13 (460V & 575V units built prior to 10-2003)

LGA/LGC 460 (G) and 575 (J) voltage units built prior to 10-2003 use two auto voltage to 230VAC transformers mounted in the control box. The transformers have an output rating of 0.5A. T3 transformer supplies 230 VAC power to combustion air inducer motor (B6), while T13 transformer supplies power to combustion air inducer motor (B15).

5-Terminal Strips TB1, TB2, TB13, TB34, TB35

TB1 terminal strip distributes 24V power and common from the thermostat to the control box components. TB13 terminal strip distributes line voltage power to the line voltage items in the unit. TB34 terminal strip distributes 24V power from T1 to the control box components. TB35 terminal strip distributes 24V power from T18 to the contactors in the control box. TB2 distributes line voltage to the unit and is found more commonly on LCA/LCC units equipped with electric heat. TB2 can be replaced with Disconnect switch S48. All L1, L2, and L3 wiring is color coded; L1 is red, L2 is yellow, and L3 is blue.

6-Outdoor Fan Motor Fuse Block & Fuses F10 (all units)

Three line voltage fuses F10 provide overcurrent protection to all condenser fans (and optional power exhaust fans) in all units. The fuses are rated at 30A in 208/230V units and 15A in all others.

7-Unit Fuse Block & Fuses F4 (LCA/LCC units only)

Three line voltage fuses F4 provide short circuit and ground fault protection to all cooling components in the LCA/LCC units. The fuses are rated in accordance with the amperage of the cooling components.

8-Outdoor Fan Capacitors C1, C2, C18, C19,C20, C21

Fan capacitors C1, C2, C18, C19, C20 and C21 are 370V / 10 MFD capacitors used to assist in the start up of condenser fans B4, B5, B21, B22, B23 and B24. respectively.

9-Compressor Contactors K1, K2, K14, K146

All compressor contactors are three pole double break contactors with a 24VAC coil. In 3 compressor units (early 360 model) K1 (energized by A55), K2 (energized by A57), and K14 (energized by A59) energize compressors B1, B2, and B13 respectively in response to first or second stage cooling demands. In all other LGA/LGC/LCALCC248H/360H units K1 (energized by A55), K2 (energized by A57), K14 and K146 (energized by A59) energize compressors B1, B2, B13, and B20 respectively.

10-Blower Contactor K3 (all units)

Blower contactor K3, used in all units, is a three-pole-double-break contactor with a 24VAC coil used to energize the indoor blower motor B3 in response to blower demand. K3 is energized by main control panel (A55).

11-Outdoor Fan Relay K10, K68, K149, K150, K152, K153

Outdoor fan relays K10, K68, K149, K150, K152 and K153 used in all units, are DPDT relays with a 24VAC coil. In all units, K10 (energized by A55) K68 (eneregized by A57), K149, K150, K152 and K153 (energized by A59) energize condenser fans B4 (fan 1), B5 (fan 2), B21 (fan 3), B22 (fan 4), B23 (fan 5) and B24 (fan 6) respectively, in response to thermostat demand. On all units condenser fans B4, B5 and B21 energize on first stage cool demand (Y1). Condensr fans B22, B23 and B24 energize on second stage cool demand (Y2). On 360H units with three compressors, condenser fans B4, B5, B21, B22, B23 and B24 energize on first stage cool demand (Y1).

12-Combustion Air Inducer Relay K13 (LGA/LGC units - first burner section)

Combustion air inducer relay K13, used in all LGA and LGC units, is a DPDT relay with a 24VAC coil. K13 is energized by the main control module A55 after a first stage heating demand from the thermostat. K13 remains energized throughout the heating demand. When energized, K13 N.O. contacts close to energize combustion air blower and begin a heating sequence. Prove switch S18, located in the compressor compartment, closes as combustion air static pressure falls to “prove” combustion air inducer operation. When S18 closes, the ignition controls and gas valves are energized to begin a heating sequence.

13-Combustion Air Inducer Relay K19 (LGA/LGC units - second burner section)

Combustion air inducer relay K19, used in all LGA and LGC units, is a DPDT relay with a 24 VAC coil. K19 is energized by the gas valve control module A58 after a first stage heating demand from the thermostat. K19 remains energized throughout the first stage heating demand. When energized, K19 N.O. contacts close to energize the second heat section combustion air inducer and begin second section heating sequence. Prove switch S45, located in the compressor compartment, closes as combustion air static pressure falls to “prove” combustion air inducer operation. When S45 closes, the second section of the ignition control and gas valve are energized to begin the second section heating sequence.

14-Burner Controls A3 & A12 (LGA units)

All LGA and LGC units have two burner controls. A3 controls gas heat section one, while A12 controls gas heat section two. The first gas heat section and the second gas heat section burner controls are identical. Both burner controls are factory set and are not adjustable. The control makes three attempts at ignition and then locks out the system if ignition is not obtained after the third trial. Reset after lockout requires only breaking and remaking thermostat demand. The control shuts off gas flow immediately in the event of a gas or power failure. Upon restoration of gas and power, the control will restart the ignition sequence and continue until flame is established or system locks out. For a more detailed description see the Gas Heat Components section.

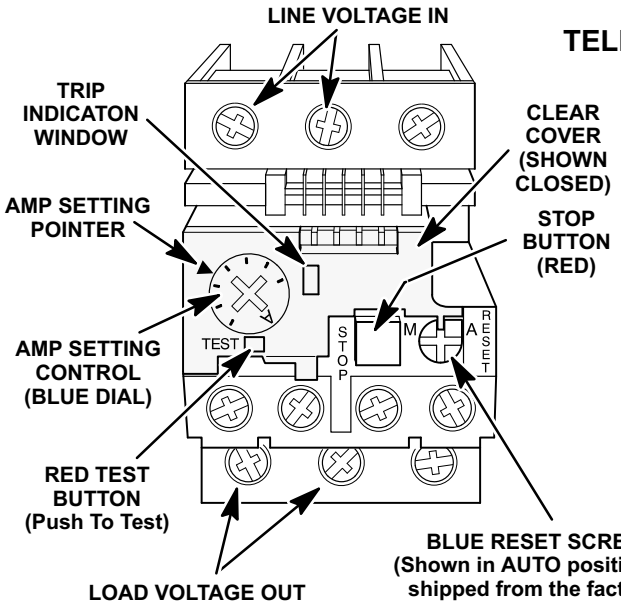
15-Power Exhaust Relay K65 (PED units)

Power exhaust relay K65 is a N.O. DPDT relay with a 24VAC coil. K65 is used in all LGA/LGC/LCA/LCC units equipped with the optional power exhaust dampers. K65 is energized by the economizer control panel (A56), after the economizer dampers reach 50% open (adjustable in ECTO). When K65 closes, the exhaust fans B10, B11 and B12 are energized.

16-Blower Motor Overload Relay S42 (units with high efficiency motors & standard efficiency motors of 7.5 HP and above)

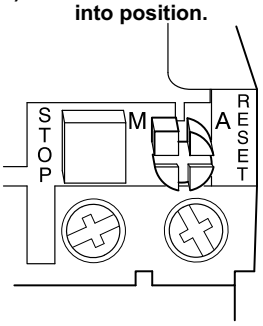
The blower motor overload relay is used in all L series units equipped with high efficiency motors, as well as units with standard efficiency motors 7.5 HP and higher. The relay (S42) is connected in line with the blower motor to monitor the current flow to the motor. When the relay senses an overload condition, a set of normally closed contacts open to de-energize pin #9 in plug 110 of the A55 main control module. A55 de-energizes all outputs. Early model units have been equipped with a control manufactured by Telemecanique which is detailed in figure 5. Units built after November 21, 1997, are equipped with a relay manufactured by Siemens which is detailed in figure 6. 7.5 HP motors used in units built after late 1998, will have an internal overload relay.

TELEMECANIQUE OVERLOAD RELAY



DETAIL SHOWING RESET BUTTON ADJUSTED TO MANUAL POSITION

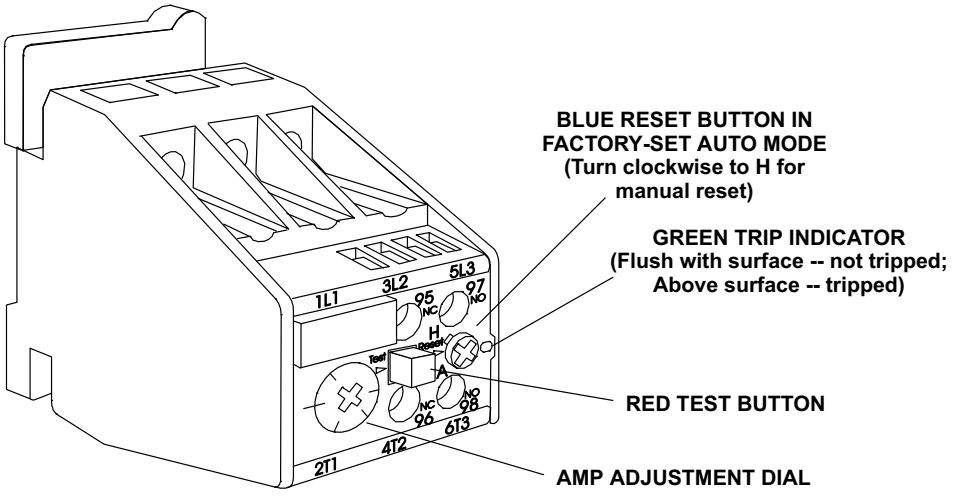
Lift clear cover and turn adjustment screw counterclockwise. Reset screw will pop out when pointer is in M (manual position). Close cover to lock reset screw into position.



Lift clear cover to adjust relay amp setting according to value given on the blower motor nameplate. Proper relay amp setting equals motor nameplate FLA X service factor of 1.15 X .95.
Cover must also be lifted to adjust control mode from automatic reset to manual reset (see detail above) and to test the control.
Control must be in the manual reset mode to perform a test. Use a pointed object to press the small red test button. A yellow marker should appear in the trip indication window to the right of the amp setting control. Press the blue reset screw to reset the relay.
The red STOP button opens the normally closed contacts which power the blower motor. This button stops blower motor operation as long as it is pressed in.

FIGURE 5

SIEMENS OVERLOAD RELAY



Adjust relay amp setting according to value given on the blower motor nameplate. Proper relay amp setting equals motor nameplate FLA X service factor of 1.15 X .95.
Use small slotted screwdriver to adjust control mode from automatic reset (A) to manual reset (H).
Control must be in the manual reset mode (H) to perform a test. Press the red test button. Green trip indicator should pop out. Press the blue reset screw to reset the relay.

FIGURE 6

ELECTRIC HEAT CONTROL SECTION (45 - 120 kW electric heat only)

17-Electric Heat Relay K9

All LCA/LCC series units with 45 - 120 kW electric heat use an electric heat relay K9. K9 is a N.O. SPST pilot relay intended to electrically isolate the unit's 24V circuit from the electric heat 24V circuit. K9 is energized by the main control board A55. K9-1 closes, enabling T2 to energize the electric heat control panel A60 and contactors K17 and K18.

18-Electric Heat Transformer T2

All LCA/LCC series units with 45 - 120 kW electric heat use a single line voltage to 24VAC transformer mounted in the electric heat control hat section in the control box. The transformer supplies power to all electric heat controls (contactors and coils). The transformer is rated at 70VA and is protected by a 3.5 amp circuit breaker CB13. The 208/230 (Y) voltage transformers use two primary voltage taps as shown in figure 4. Transformer T2 is identical to T1.

INTEGRATED MODULAR CONTROL BOARDS

The Integrated Modular Control (IMC) is a series of control boards which integrates most control functions required for the LGA/LGC/LCA/LCC units. The control boards are located in the upper left hand corner of the control box. The control includes complete unit diagnostics with permanent code storage, field programmable control parameters and control options, on-site testing, and serial communications. Seven different printed circuit boards (see figure 7) make-up the modular configurations for the LGA/LGC/LCA/LCC units. See table 1 for a list of control panels used for each unit. See figure 7 for control location. For further information refer to Integrated Modular Control Guide sent with each unit.

TABLE 1

UNIT	CONTROL PANELS						
	A55	A57	A59	A58	A60	A61	A56
LGA/LGC	X	X	X	X			OPT
LCA/LCC	X	X	X		X		OPT

19-Main Control Module A55 (all units)

The main control module A55 is the heart of the system. It controls one compressor, one two-stage gas valve (first stage), one bank of electric heat, one outdoor fan, and one blower. A55 includes the thermostat inputs, serial communications ports, diagnostic code display, control pushbutton, system configuration dip switches, and four expansion ports. A diagnostic code list is located on the back side of the left access panel.

20-Compressor 2 Control Module A57 (all units)

The compressor 2 control module A57 controls one additional compressor stage for the LGA/LGC/LCA/LCC units. A57 includes all inputs and outputs required for compressor and fan control, compressor stages diagnostics, and low ambient control.

21-Compressor 3 & 4 Control Module A59 (all units)

The compressor 3 & 4 control module A59 controls two additional compressor stages for the LGA/LGC/LCA/LCC units. A59 includes all inputs and outputs required for compressor and fan control, compressor stage diagnostics, and low ambient control.

22-Gas Valve Control Module A58 (LGA/LGC units)

The gas valve control module A58 controls an additional burner with a two-stage gas valve. A58 includes all inputs and outputs required for control and diagnostics of one two-stage gas valve burner (second stage).

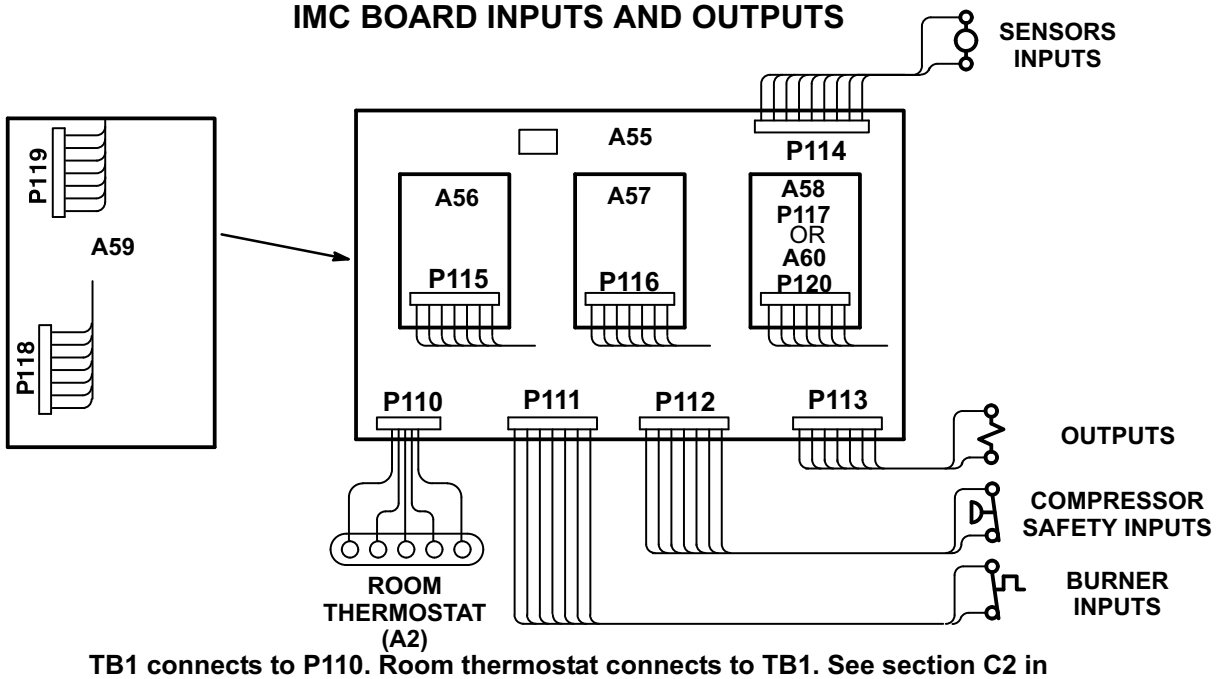
23-Electric Heat Control Module A60 (LCA/LCC units if 45 - 120 kW electric heat is used)

The electric heat control module A60 is used to control a second electric heat bank. A60 is used on the LCA/LCC units.

24-Economizer Control Module A56 (Economizer only)

The economizer control module A56 controls the economizer. A56 has four different cooling modes, sensible temperature, outdoor enthalpy, differential enthalpy, and global control.

IMC BOARD INPUTS AND OUTPUTS



TB1 connects to P110. Room thermostat connects to TB1. See section C2 in the wiring diagram section P.65

IMC AND ADD-ON BOARD LOCATION AND OPERATION

A59 (LCA / LGA): Compressors 3 and 4 and Outdoor Fans (4)

A55: 1 Blower, 1 Compressor, 1 Outdoor fan; 1 Gas valve, 1 Reversing valve, 1 Electric heat section

- **A56:** Optional Economizer and/or Power Exhaust Fan
- **A57 (LCA / LGA):** Second compressor 1 Outdoor fan
- **A58:** Second Gas Valve or **A60:** Second Electric Heat Section

FIGURE 7

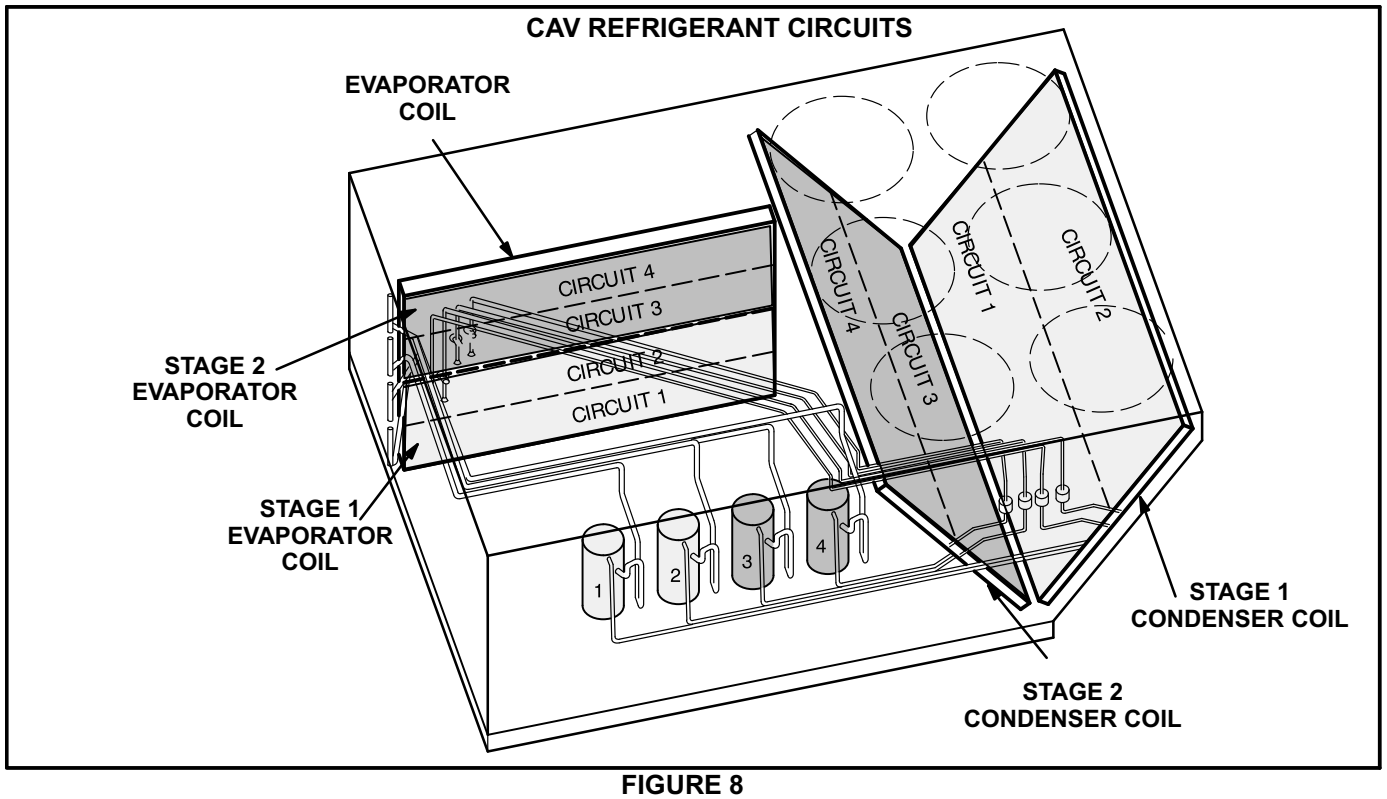


FIGURE 8

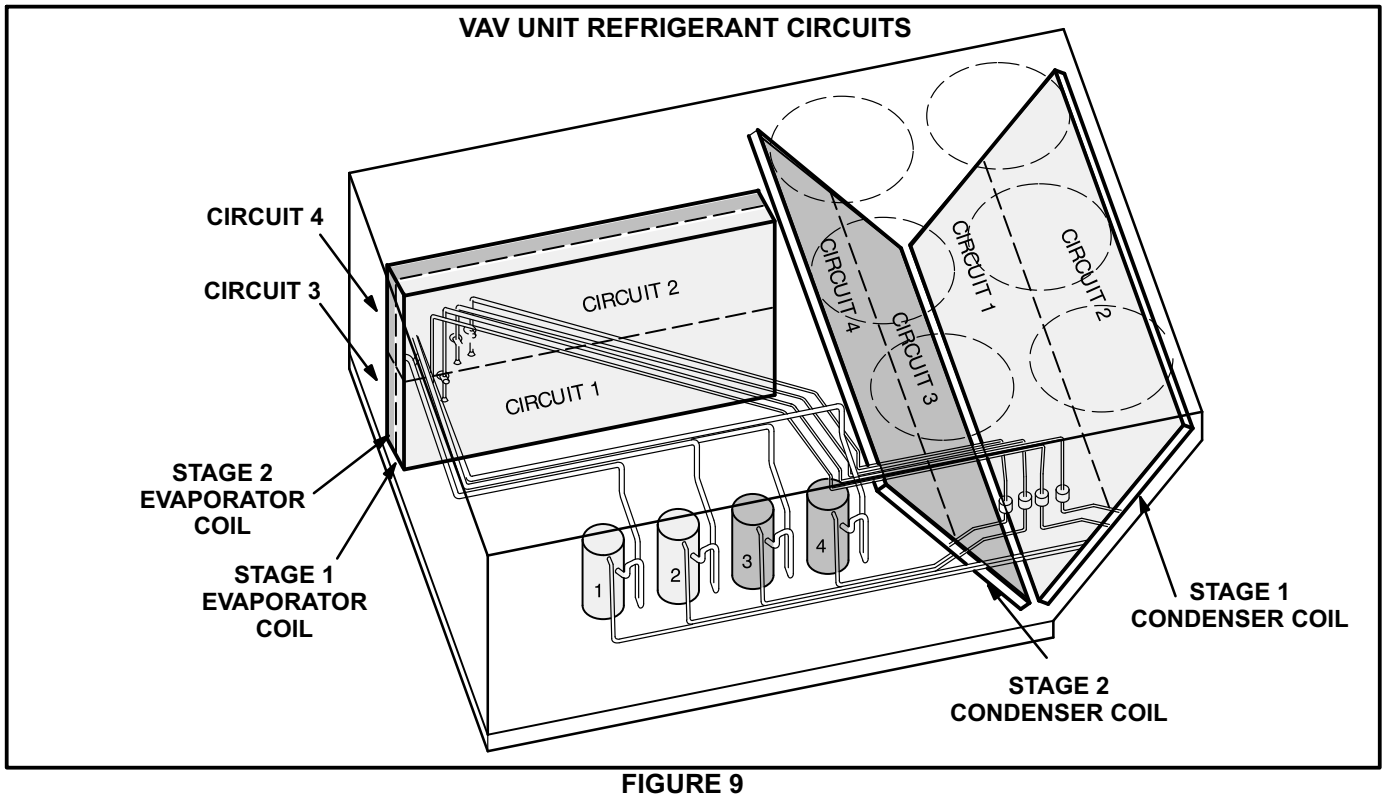


FIGURE 9

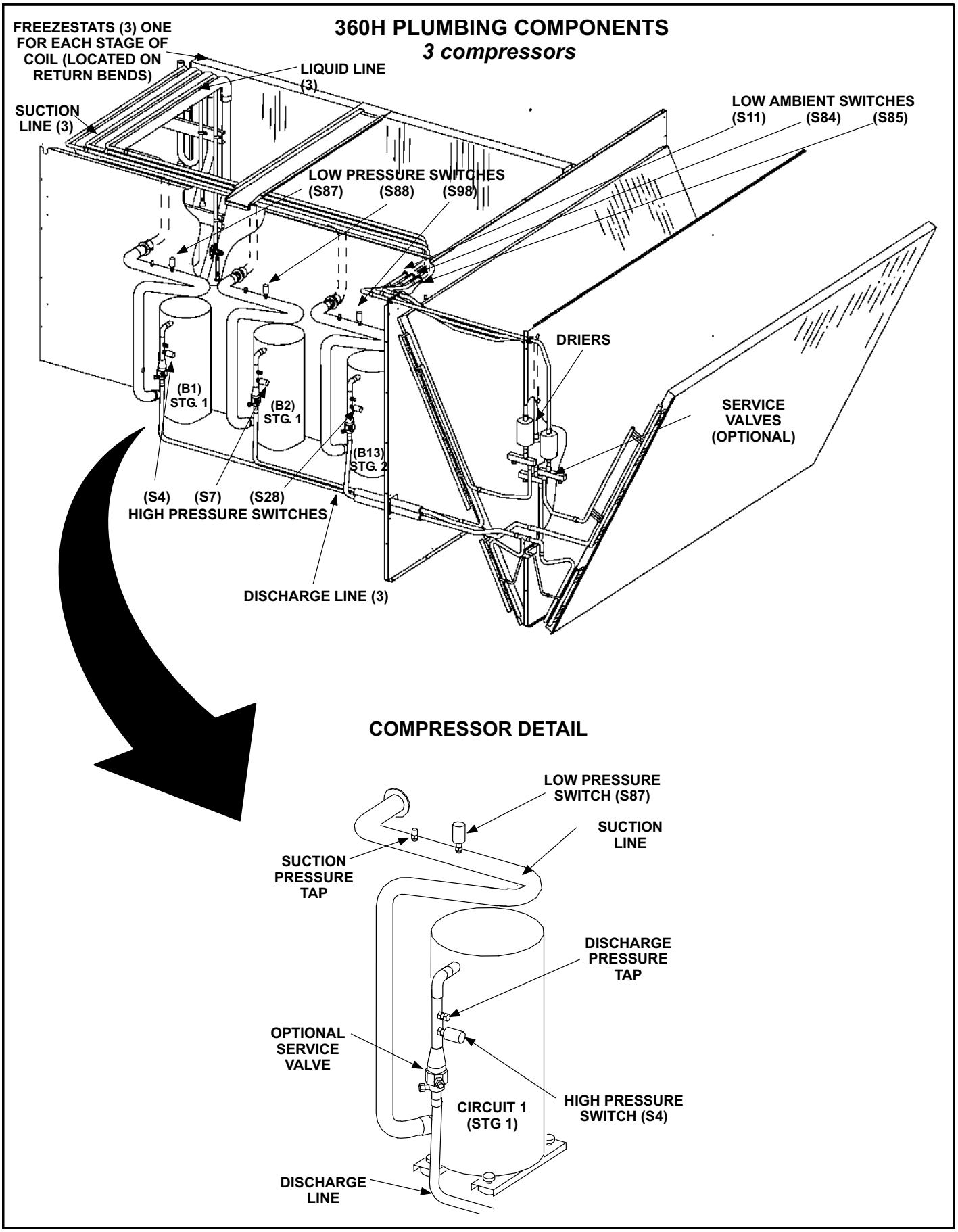

360H PLUMBING COMPONENTS
3 compressors
FREEZESTATS (3) ONE FOR EACH STAGE OF COIL (LOCATED ON RETURN BENDS)
LIQUID LINE (3)
SUCTION LINE (3)
LOW AMBIENT SWITCHES (S11) (S84) (S85)
LOW PRESSURE SWITCHES (S87) (S88) (S98)
DRIERS
(B1) STG. 1
(B2) STG. 1
(B13) STG. 2
SERVICE VALVES (OPTIONAL)
(S4) (S7) (S28) HIGH PRESSURE SWITCHES
DISCHARGE LINE (3)
COMPRESSOR DETAIL
LOW PRESSURE SWITCH (S87)
SUCTION LINE
SUCTION PRESSURE TAP
DISCHARGE PRESSURE TAP
OPTIONAL SERVICE VALVE
CIRCUIT 1 (STG 1)
HIGH PRESSURE SWITCH (S4)
DISCHARGE LINE

FIGURE 10

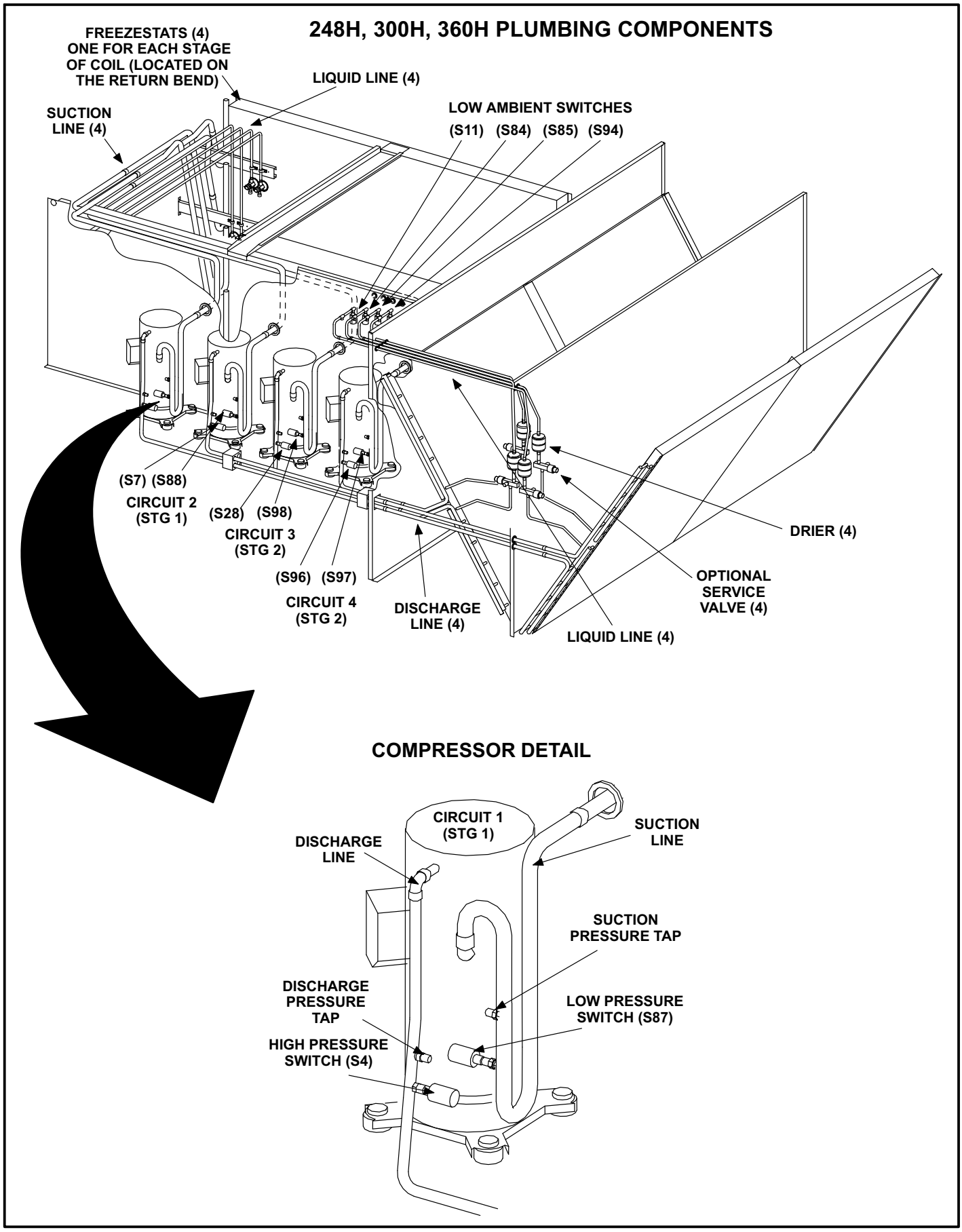

248H, 300H, 360H PLUMBING COMPONENTS
FREEZESTATS (4)
ONE FOR EACH STAGE
OF COIL (LOCATED ON
THE RETURN BEND)
LIQUID LINE (4)
SUCTION
LINE (4)
LOW AMBIENT SWITCHES
(S11) (S84) (S85) (S94)
(S7) (S88)
CIRCUIT 2
(STG 1)
(S28) (S98)
CIRCUIT 3
(STG 2)
(S96) (S97)
CIRCUIT 4
(STG 2)
DISCHARGE
LINE (4)
DRIER (4)
OPTIONAL
SERVICE
VALVE (4)
LIQUID LINE (4)
COMPRESSOR DETAIL
CIRCUIT 1
(STG 1)
DISCHARGE
LINE
SUCTION
LINE
SUCTION
PRESSURE TAP
DISCHARGE
PRESSURE
TAP
LOW PRESSURE
SWITCH (S87)
HIGH PRESSURE
SWITCH (S4)

FIGURE 11

B-Cooling Components Figures 10 and 11

All units use independent cooling circuits (figures 8 and 9) consisting of separate compressors, condenser coils and evaporator coils. Six draw-through type condenser fans are used in all units. All units are equipped with belt-drive blowers which draw air across the evaporator during unit operation.

Cooling may be supplemented by a factory- or field-installed economizer. The evaporators are slab type and are stacked. Each evaporator uses a thermostatic expansion valve as the primary expansion device. Each evaporator is also equipped with enhanced fins and rifled tubing. In all units each compressor is protected by a crankcase heater, high pressure switch and low pressure switch. Additional protection is provided by low ambient switches and freezestats (on each evaporator).

1-Compressors B1, B2, B13, B20

⚠ WARNING

Electrical shock hazard. Compressor must be grounded. Do not operate without protective cover over terminals. Disconnect power before removing protective cover. Discharge capacitors before servicing unit. Failure to follow these precautions could cause electrical shock resulting in injury or death.

All units use 4 scroll compressors. Early model 360H units use 3 scroll compressors. See figures 10 and 11. Compressor capacity may vary from stage to stage. In all cases, the capacity of each compressor is added to reach the total capacity of the unit. Compressor electrical specifications can be found in the SPECIFICATIONS section in this manual. Each compressor is energized by a corresponding compressor contactor.

NOTE-Refer to the wiring diagram section for specific unit operation.

2-Crankcase Heaters HR1, HR2, HR5, HR11

All units use belly-band type crankcase heaters. Heater HR1 is installed around compressor B1, heater HR2 compressor B2, HR5 compressor B13, and HR11 compressor B20. Crankcase heater wattage varies by compressor size.

⚠ IMPORTANT

Pressure switch settings are significant higher on R410A charged units than R22 charged units.

3-High Pressure Switches S4, S7, S28, S96

The high pressure switch is an auto-reset SPST N.C. switch which opens on a pressure rise. All units are equipped with this switch. The switch is located in the compressor discharge line and is wired in series with the compressor contactor coil.

S4 (first circuit), S7 (second circuit), S28 (third circuit), and S96 (fourth circuit) are wired in series with the respective compressor contactor coils.

Main control A55 has a three-strike counter before locking out the particular compressor circuit. This means the control allows three high pressure trips per one thermostat demand. The control can be reset by breaking and remaking the thermostat demand or manually resetting the control.

Units charged with R22

When discharge pressure rises to 450 $\pm$ 10 psig (3103 $\pm$ 69 kPa) (indicating a problem in the system) the switch opens and the respective compressor is de-energized (the economizer can continue to operate). When discharge pressure drops to 310 $\pm$ 20 psig (2137 $\pm$ 138 kPa) the pressure switch will close.

Units charged with R410A

When discharge pressure rises to 650 ± 10 psig (4413 ± 69 kPa) (indicating a problem in the system) the switch opens and the respective compressor is de-energized (the economizer can continue to operate). When discharge pressure drops to 475 ± 20 psig (3275 ± 138 kPa) the pressure switch will close.

4-Low Ambient Switches S11, S84, S85, S94

The low ambient switch is an auto-reset SPST N.O. pressure switch which allows for mechanical cooling operation at low outdoor temperatures. All units are equipped with this switch. In all models a switch is located in each liquid line prior to the indoor coil section.

In the 360H units with 3 compressors S11 (compressor one), S84 (compressor two), and S85 (compressor three) are wired in parallel, wired to the low ambient switch relay K159. In all other 248H, 300H and 360H units S11 and S84 are in parallel, wired to outdoor fan relay K10, while S85 and S94 (compressor four) are in parallel, wired to third outdoor fan relay K149.

Units charged with R22

When liquid pressure rises to 275 ±10 psig (1896 ± 69 kPa), the switch closes and the condenser fan is energized. When discharge pressure in one refrigerant circuit drops to 150 ± 10 psig (1034 ± 69 kPa), the switch opens and the condenser fan in that refrigerant circuit is de-energized. This intermittent fan operation results in higher evaporating temperature allowing the system to operate without icing the evaporator coil and losing capacity.

Units charged with R410A

When liquid pressure rises to 450 ± 10 psig (3102 ± 69 kPa), the switch closes and the condenser fan is energized. When discharge pressure in one refrigerant circuit drops to 240 ± 10 psig (1655 ± 69 kPa), the switch opens and the condenser fan in that refrigerant circuit is de-energized. This intermittent fan operation results in higher evaporating temperature allowing the system to operate without icing the evaporator coil and losing capacity.

5-Low Pressure Switches S87, S88, S98, S97

The low pressure switch is an auto-reset SPST N.O. switch (held N.C. by refrigerant pressure) which opens on a pressure drop. All units are equipped with this switch. The switch is located in the compressor suction line.

S87 (compressor one), S88 (compressor two), S98 (compressor three), and S97 (compressor four) are wired in series with the main control module A55.

The main control module A55 governs the low pressure switches by shunting the switches during start up until pressure is stabilized. After the shunt period, the control has a three-strike counter, during first thermostat demand, before the compressor is locked out. The control is reset by breaking and remaking the thermostat demand or manually resetting the control.

Units charged with R22

When suction pressure drops to 25 ± 5 psig (172 ± 34 kPa) (indicating low pressure), the switch opens and the compressor is de-energized. The switch automatically resets when pressure in the suction line rises to 55 ± 5 psig (379 ± 34 kPa), due to many causes such as refrigerant being added.

Units charged with R410A

When suction pressure drops to 40 ± 5 psig (276 ± 34 kPa) (indicating low pressure), the switch opens and the compressor is de-energized. The switch automatically resets when pressure in the suction line rises to 90 ± 5 psig (620 ± 34 kPa), due to many causes such as refrigerant being added.

6-Service Valve (optional all units)

Units may be equipped with service valves located in the discharge and liquid lines. The service valves are manually operated valves used for service operation.

7-Filter Drier (all units)

All units have a filter drier located in the liquid line of each refrigerant circuit at the exit of each condenser coil. The drier removes contaminants and moisture from the system.

8-Freezestats S49, S50, S53, S95

Each unit is equipped with a low temperature switch (freezestat) located on the return bend of each evaporator coil. S49 (first circuit), S50 (second circuit), S53 (third circuit), and S95 (fourth circuit) are located on the corresponding evaporator coils.

Each freezestat is wired to the main control module A55. Each freezestat is a SPST N.C. auto-reset switch which opens at 29°F ± 3°F (-1.7°C ± 1.7°C) on a temperature drop and closes at 58°F ± 4°F (14.4°C ± 2.2°C) on a temperature rise. To prevent coil icing, freezestats open during compressor operation to temporarily disable the respective compressor until the coil warms sufficiently to melt any accumulated frost.

If the freezestats are tripping frequently due to coil icing, check the unit charge, airflow and filters before allowing unit back in operation. Make sure to eliminate conditions which might promote evaporator ice buildup.

9-Condenser Fans B4, B5, B21, B22, B23, B24

See Specifications section in this manual for specifications of condenser fans used in LGA/LGC/LCA/LCC units. All condenser fans used have single-phase motors. All units are equipped with six condenser fans. The complete fan assembly may be removed for servicing and cleaning by removing the fan grill and turning the complete assembly until the motor brackets line up with the notches in the top panel. Lift the fan assembly out of the unit and disconnect the jack plug located on the motor.

C-Blower Compartment

The blower compartment in all units is located between the evaporator coil and the compressor / control section on the opposite side of the condenser coil. The blower assembly is accessed by disconnecting the blower motor jack plug J98/P98 (and all other plugs) and removing the screws on either side of the sliding base. The base pulls out as shown in figure 12.

1-Blower Wheels (all units)

All units have two 18 in. x 15 in. (457 mm x 381 mm) blower wheels. Both wheels are driven by one motor.

2-Indoor Blower Motor B3 (all units)

All units use three-phase single-speed blower motors. CFM adjustments are made by adjusting the motor pulley (sheave). Motors are equipped with sealed ball bearings. All motor specifications are listed in the SPECIFICATIONS section in this manual. Units may be equipped with motors manufactured by various manufacturers, therefore electrical FLA and LRA specifications will vary. See unit rating plate for information specific to your unit.

⚠IMPORTANT

Three phase scroll compressors must be phased sequentially for correct compressor and blower rotation. Follow "COOLING START-UP" section of installation instructions to ensure proper compressor and blower operation.

A-Blower Operation

Initiate blower demand at thermostat according to instructions provided with thermostat. Unit will cycle on thermostat demand. The following steps apply to applications using a typical electro-mechanical thermostat.

1- Blower operation is manually set at the thermostat subbase fan switch. With fan switch in **ON** position, blowers will operate continuously.

2- With fan switch in **AUTO** position, the blowers will cycle with demand. Blowers and entire unit will be off when system switch is in **OFF** position.

In zone sensor applications the blower will cycle with demand (default). For continuous blower operation change ECTO 6.17 to option 1. Refer to the IMC manual.

B-Blower Access

1- Disconnect jack/plug connector to blower motor. Also disconnect jack/plug connector heating limit switches on units containing gas heat.

2- Remove screws on either side of blower assembly sliding base. See figure 12.

3- Pull base toward outside of unit.

C-Determining Unit CFM

1- The following measurements must be made with a dry indoor coil. Run blower without a cooling demand. Measure the indoor blower shaft RPM. Air filters must be in place when measurements are taken.

2- With all access panels in place, measure static pressure external to unit (from supply to return).

3- Use the tables at the front of this manual to determine unit CFM.

4- *Constant Air Volume (CAV) Supply Air Blowers* - The blower RPM can be adjusted at the motor pulley. Loosen Allen screw and turn adjustable pulley clockwise to increase CFM. Turn counterclockwise to decrease CFM. See figure 12. Do not exceed minimum and maximum number of pulley turns as shown in table 2.

TABLE 2
MINIMUM AND MAXIMUM PULLEY ADJUSTMENT

Belt	Minimum Turns Open	Maximum Turns Open
A Section	No minimum	5
B Section	1*	6

*No minimum number of turns open when B belt is used on pulleys 6" O.D. or larger.

5- *Variable Air Volume (VAV) Supply Air Blowers* - The VFD blower motor pulley is fixed. The supply CFM can be adjusted at the IMC board or by using optional software. Refer to the IMC manual ECTO 0.08.

In default mode, the IMC is set to drive the blower to maximum CFM output (100% or 60Hz). To decrease the CFM, reduce the VAV maximum output (ECTO 0.08). To increase the CFM, contact Technical Support.

The default minimum blower output is 50% (30Hz). Refer to ECTO 0.06 and 0.07 to adjust the VAV minimum output.

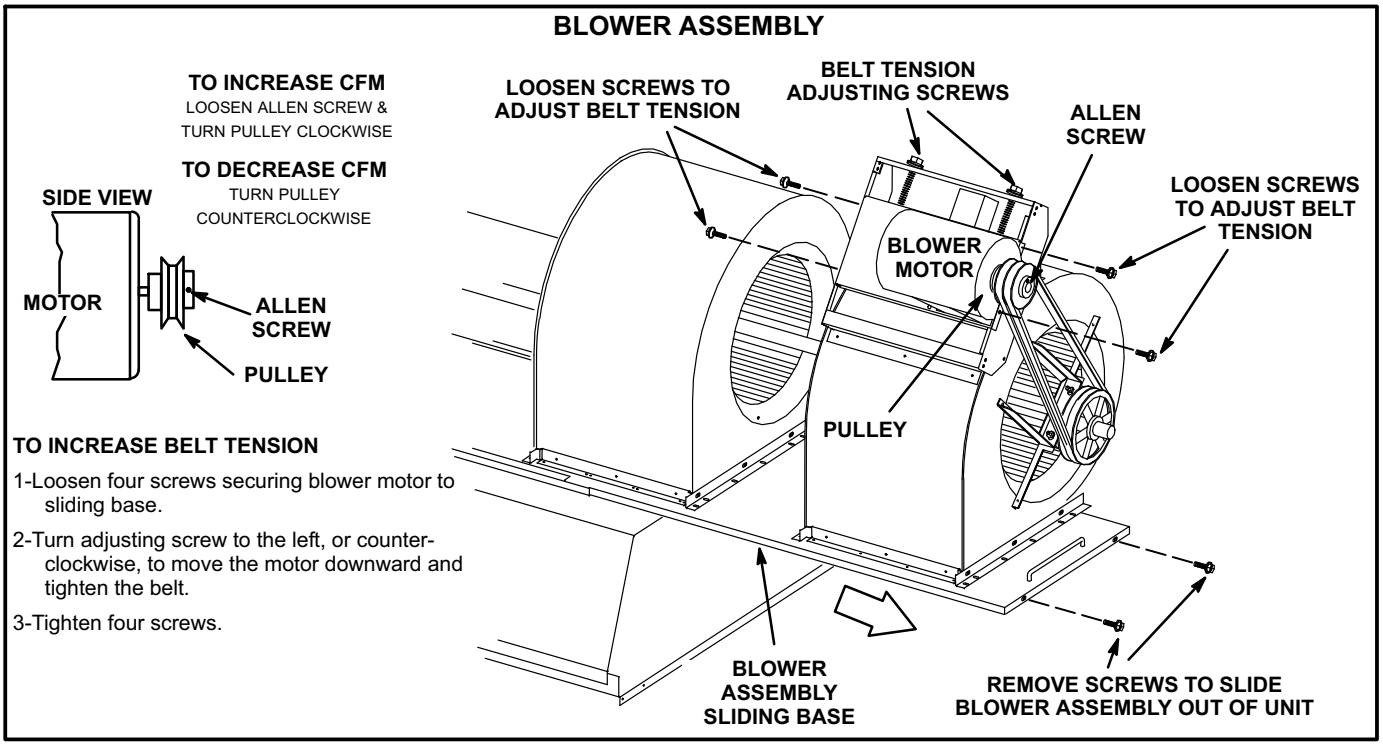


FIGURE 12

D-Blower Belt Adjustment

Maximum life and wear can be obtained from belts only if proper pulley alignment and belt tension are maintained. Tension new belts after a 24-48 hour period of operation. This will allow belt to stretch and seat grooves. Make sure blower and motor pulley are aligned as shown in figure 13.

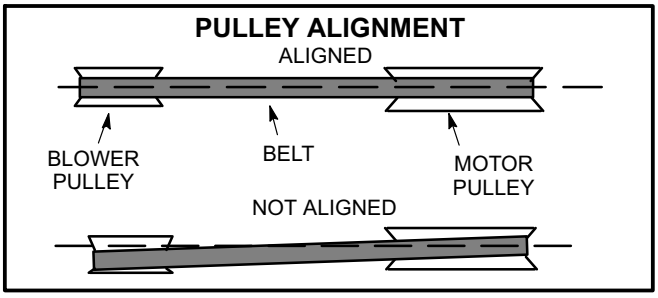


FIGURE 13

1- Loosen four screws securing blower motor to sliding base. See figure 12.

2- *To increase belt tension -*
Turn belt tension adjusting screw to the left, or counter-clockwise, to tighten the belt. This increases the distance between the blower motor and the blower housing.

To loosen belt tension -
Turn the adjusting screw to the right, or clockwise to loosen belt tension.

3- Tighten four screws securing blower motor to sliding base once adjustments have been made.

E-Check Belt Tension

Overtensioning belts shortens belt and bearing life. Check belt tension as follows:

1- Measure span length X. See figure 14.

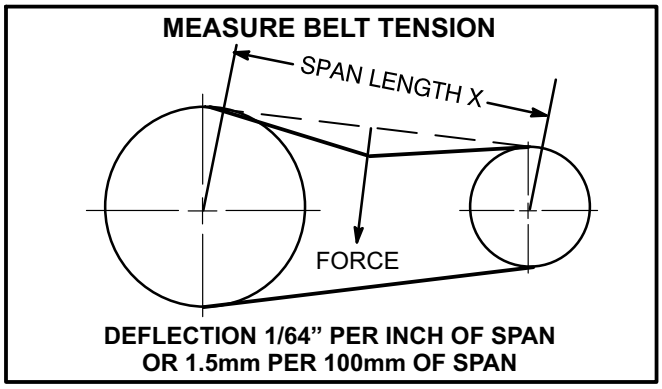


FIGURE 14

2- Apply perpendicular force to center of span (X) with enough pressure to deflect belt 1/64" for every inch of span length or 1.5mm per 100mm of span length.

Example: Deflection distance of a 40" span would be 40/64" or 5/8".

Example: Deflection distance of a 400mm span would be 6mm.

3- Measure belt deflection force. For a used belt, the deflection force should be 5 lbs. (35kPa). A new belt deflection force should be 7 lbs. (48kPa).

F-Furnished Blower Drives

For field furnished blower drives, see BLOWER DATA (table of contents) for CFM and PRM. The BLOWER DATA section also has tables for CAV and VAV drive numbers and manufacturer's model numbers.

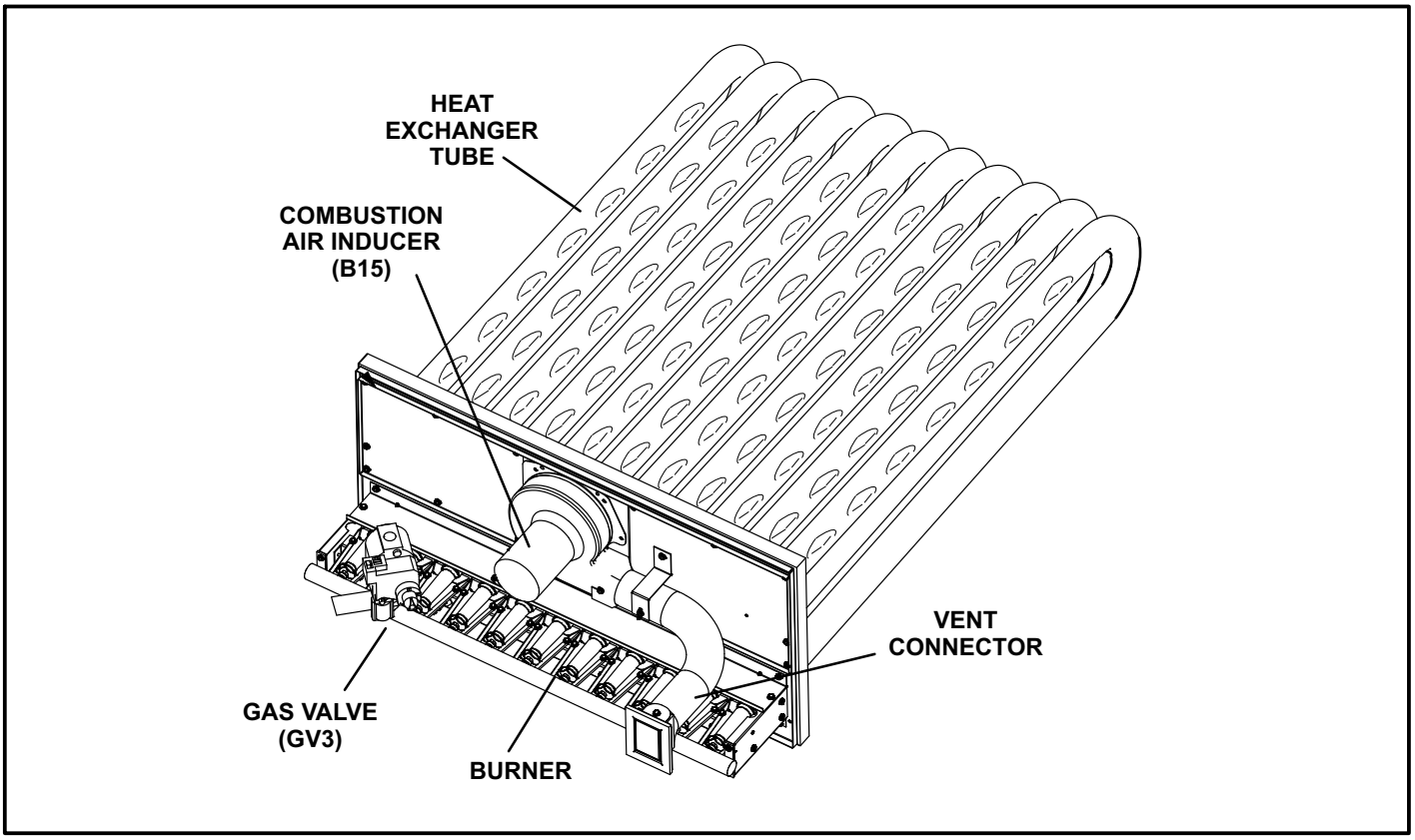


FIGURE 15

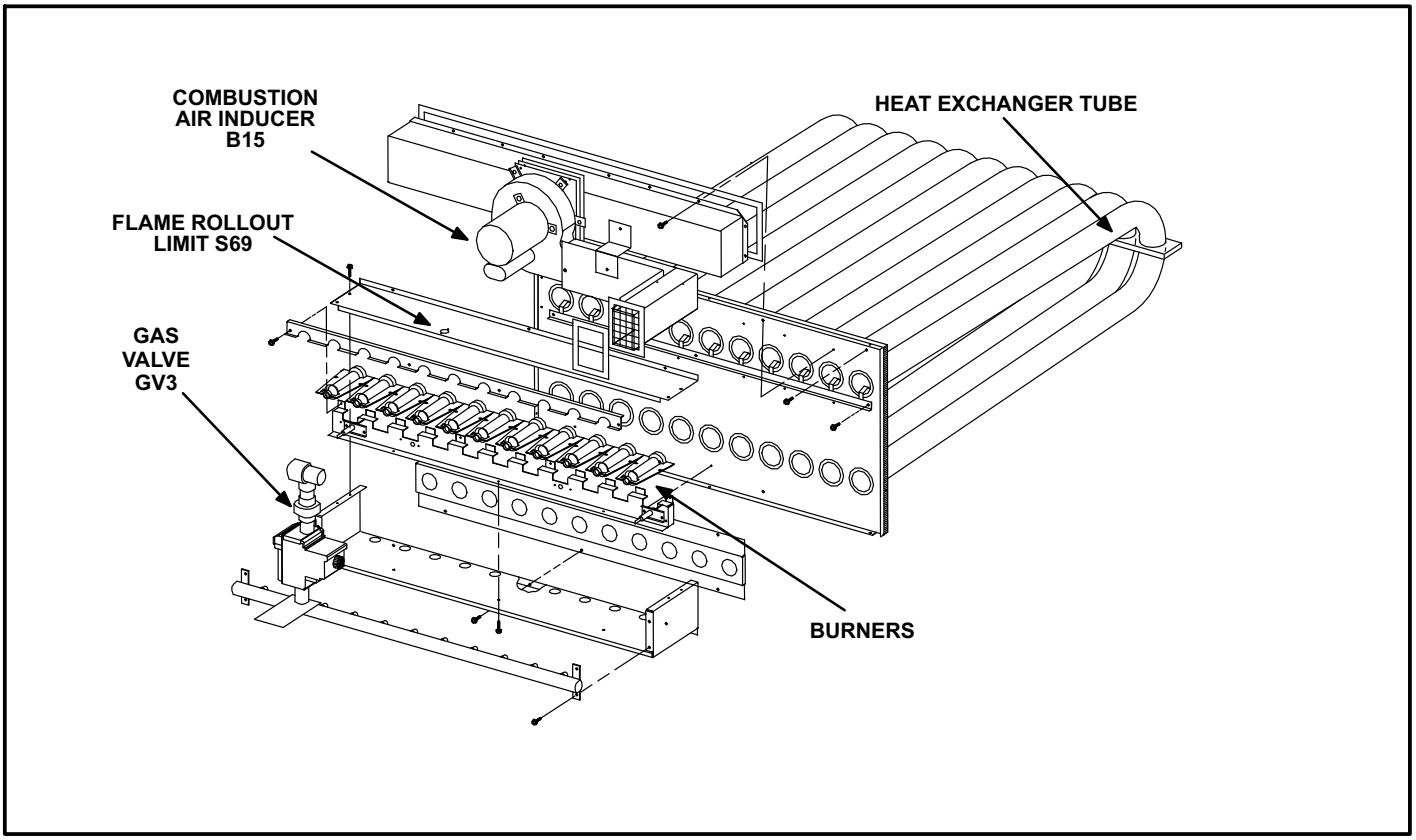


FIGURE 16

D-GAS HEAT COMPONENTS (all LGA units)

LGA300/360 production units to July 2004 are available in 260,000 BTUH (76.2 kW) standard gas heat or 470,000 BTUH (137.7 kW) high gas heat sizes. LGA/LGC248/300/360 units built August 2004 and later are available in 260,000 Btuh (76.2 kW) standard gas heat, 360,000 Btuh (105.5 kW) medium gas heat and 480,000 Btuh (140.6 kW) high gas heat sizes. See unit nameplate for capacities. All units are equipped with two identical gas heat sections (gas heat section one and gas heat section two). Most units will have a flexible connection instead of cast iron pipe, though some earlier models will have cast iron pipe. Black steel pipe will feed the supply gas to each gas valve. If for service the flexible connection must broken, hand tighten, then using a wrench turn additional 1/4 turn for metal to metal seal *(do not over tighten).*

NOTE-Do not use thread sealing compound on flex pipe flare connections.

1-Control Box Components A3, A12, A55, A58, T3, T13, K13 and K19

The main control box (see figure 3) houses the burner controls A3 and A12, main control module A55, gas valve (burner) control module A58, combustion air inducertransformers T3 and T13, combustion air inducerrelay K13, and second heat section relay K19. For a description of the components see section I-A. A more detailed description of burner controls A3 and A12 is given below.

Burner Ignition Control A3 and A12

The ignition controls are located in the control box. Three different manufacturers' (Fenwal, Johnson Controls, and RAM) controls are used in the LGA/LGC units. All three ignition controls operate the same.

The ignition control provides three main functions: gas valve control, ignition, and flame sensing. The unit will usually ignite on the first attempt; however, the ignition attempt sequence provides three trials for ignition before locking out. The lockout time for the Johnson control is 5 minutes. The lockout time for the Fenwall and RAM control is 1 hour. After lockout, the ignition control automatically resets and provides three more attempts at ignition. Manual reset after lockout requires breaking and remaking power to the ignition control. See figure 18 for a normal ignition sequence and figure 19 for the ignition attempt sequence with retrials (nominal timings given for simplicity). Specific timings for the ignition controls are shown in figure 20.

Flame rectification sensing is used on all LGA/LGC units. Loss of flame during a heating cycle is indicated by an absence of flame signal (0 microamps). If this happens, the control will immediately restart the ignition sequence and then lock out if ignition is not gained after the third trial. See table 21 for microamp signal values .

The control shuts off gas flow immediately in the event of a power failure. Upon restoration of gas and power, the control will restart the ignition sequence and continue until flame is established or system locks out.

On a heating demand, the ignition control is energized by the main control module A55. The ignition control then allows 30 to 40 seconds for the combustion air inducerto vent exhaust gases from the burners. When the combustion air induceris purging the exhaust gases, the combustion air prove switch is closing proving that the combustion air induceris operating before allowing the ignition control to energize. When the combustion air prove switch is closed and the delay is over, the ignition control activates gas valve, the spark electrode and the flame sensing electrode. Sparking stops immediately after flame is sensed. The combustion air inducercontinues to operate throughout the heating demand. If the flame fails or if the burners do not ignite, the ignition control will attempt to ignite the burners up to two more times. If ignition cannot be obtained after the third attempt, the control will lock out. The ignition control is not adjustable.

The Johnson control is illustrated in figure 17. The spade connections are used to connect the control to unit. Each of the spade terminals are identified by function. The spark electrode wire connects to the spark-plug-type connector on top of the control.

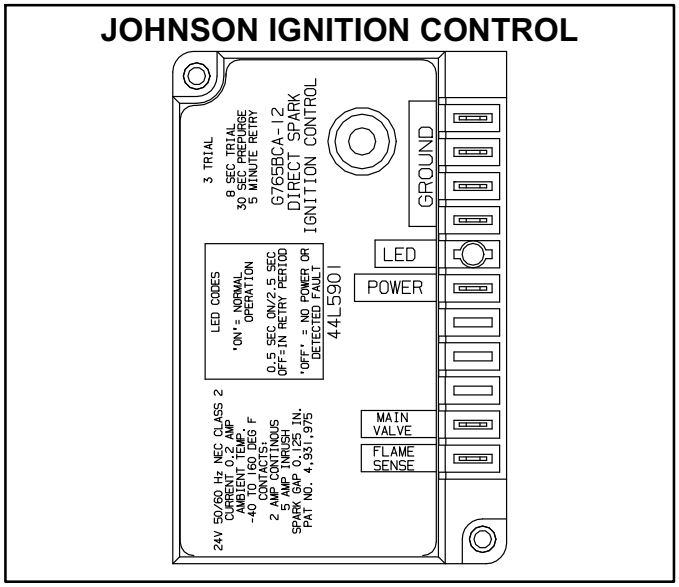


FIGURE 17

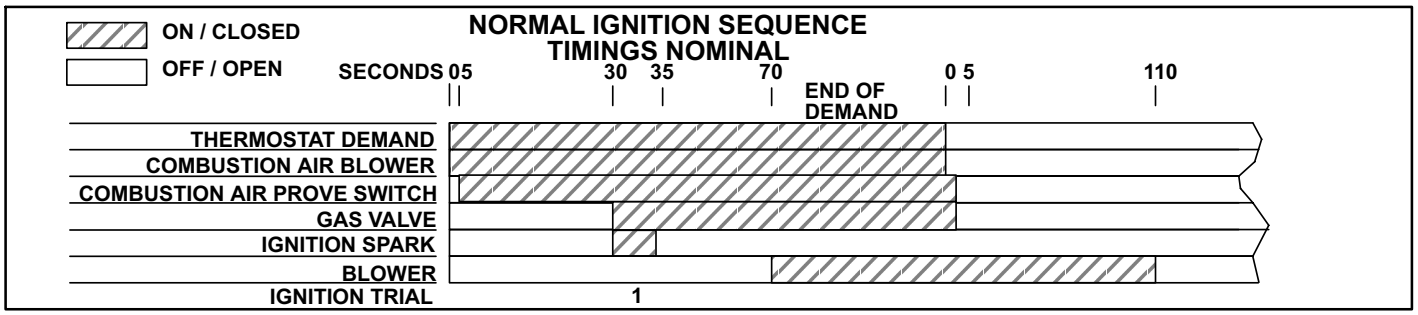


FIGURE 18

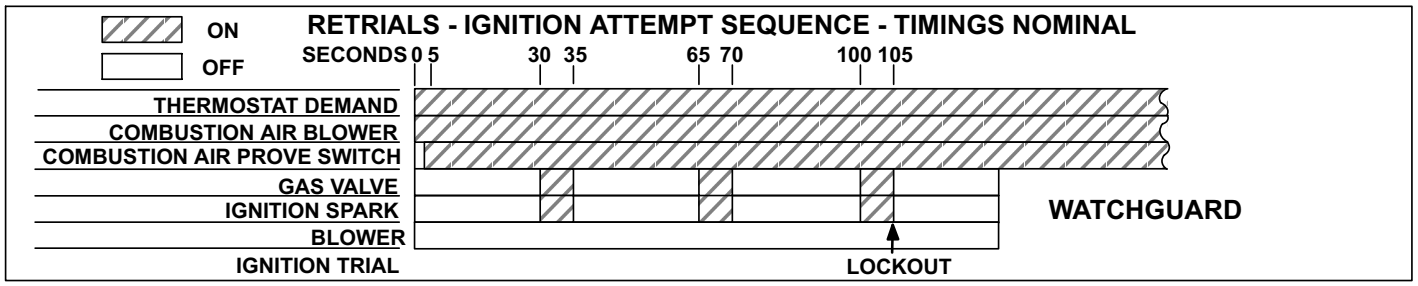


FIGURE 19

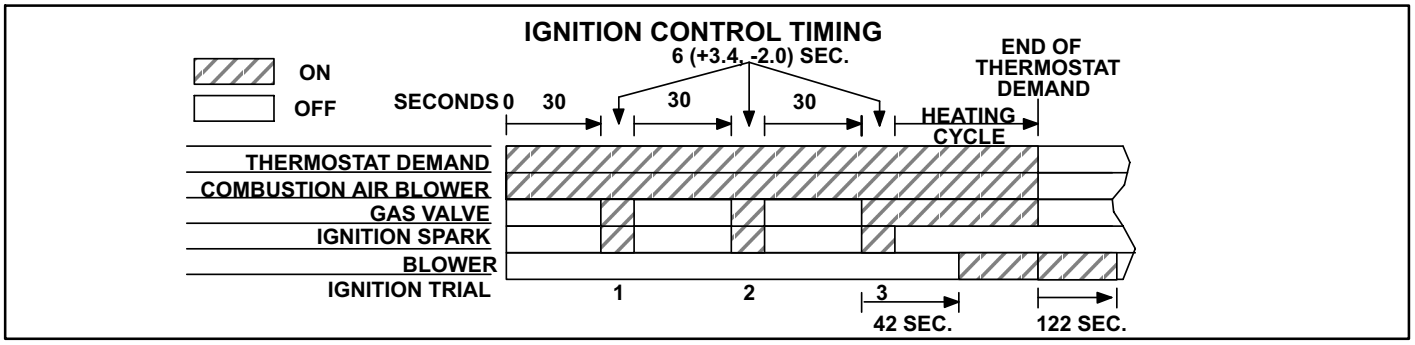


FIGURE 20

⚠ WARNING

SHOCK HAZARD. SPARK RELATED COMPONENTS CONTAIN HIGH VOLTAGE WHICH CAN CAUSE PERSONAL INJURY OR DEATH. DISCONNECT POWER BEFORE SERVICING. CONTROL IS NOT FIELD REPAIRABLE. UNSAFE OPERATION WILL RESULT. IF THE CONTROL IS INOPERABLE, SIMPLY REPLACE THE ENTIRE CONTROL.

2-Heat Exchanger (Figures 15 and 16) Two Styles used

The LGA/LGC units use aluminized steel inshot burners with matching tubular aluminized steel (stainless steel is an option) heat exchangers and two-stage redundant gas valves. LGA/LGC uses two eleven tube/burners for high heat, two nine tube burners for medium heat (if applicable, see unit nameplate) and two six tube/burners for standard heat. Each burner uses a burner venturi to mix gas and air for proper combustion. Combustion takes place at each tube entrance. As hot combustion gases are drawn upward through each tube by the combustion air blower, exhaust gases are drawn out the top and fresh air/gas mixture is drawn in at the bottom. Heat is transferred to the air stream from all surfaces of the heat exchanger tubes. The supply air blowers, controlled by the main control panel A55, force air across all surfaces of the tubes to extract the heat of combustion. The shape of the tubes ensures maximum heat exchange.

The gas valves accomplish staging by allowing more or less gas to the burners as called for by heating demand.

3-Burner Assembly (Figure 21)

The burners are controlled by the spark electrode, flame sensing electrode, gas valve and combustion air blower. The spark electrode, flame sensing electrode and gas valve are directly controlled by ignition control. Ignition control and combustion air induceris controlled by main control panel A55.

Burners

All units use inshot burners (see figures 21 and 22). Burners are factory set and do not require adjustment. A peep hole with cover is furnished in the heating access panel for flame viewing. Always operate the unit with the access panel in place. Burners can be removed individually for service. Burner maintenance and service is detailed in the SERVICE CHECKS sections of this manual.

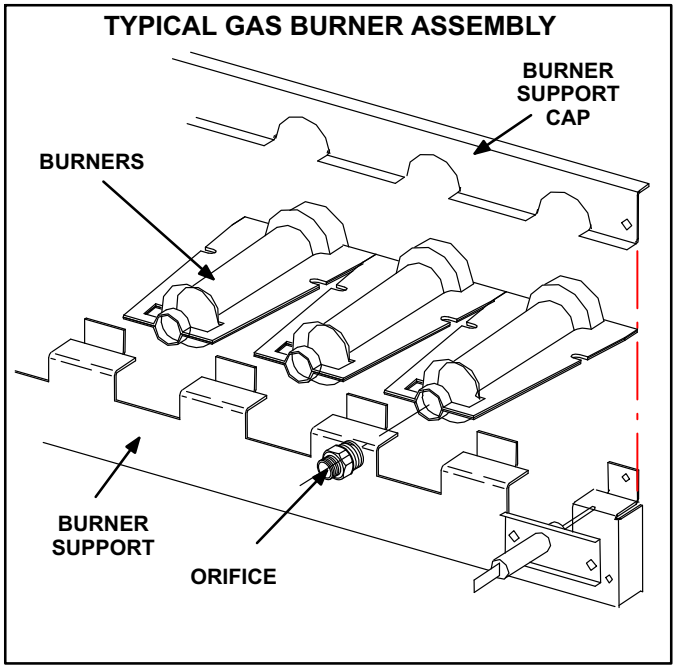


FIGURE 21

Orifice

Each burner uses an orifice which is precisely matched to the burner input. The orifice is threaded into the burner manifold. The burner is supported by the orifice and will easily slide off for service.

NOTE-Do not use thread sealing compound on the orifices. Using thread sealing compound may plug the orifices.

Each orifice and burner are sized specifically to the unit. Refer to Lennox Repair Parts Listing for correct sizing information.

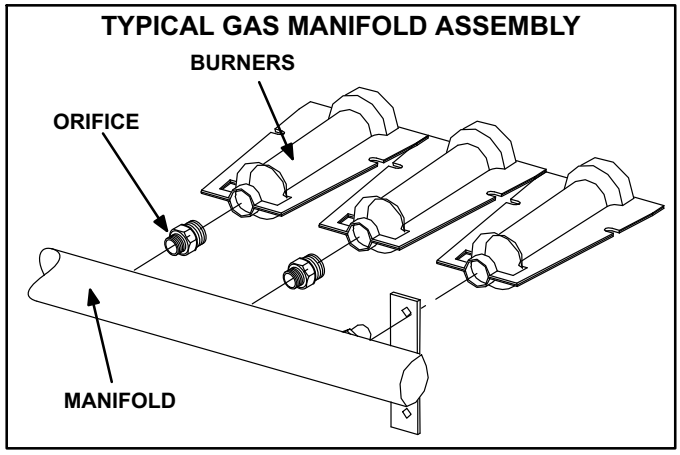


FIGURE 22

NOTE-In primary and secondary high temperature limits S10, S99, S21, and S100 the ignition circuits in both gas heat sections one and two are immediately de-energized when terminals 1-3 open and the indoor blower motor is immediately energized when terminals 1-2 close. This is the primary and secondary safety shutdown function of the unit.

4-Primary High Temperature Limits S10 & S99

Figure 23 shows locations for temperature limits S10 and S99 on LGA/LCA models built up to production July 2004. S10 is the primary high temperature limit for gas heat section one, while S99 is the primary high temperature limit for gas heat section two. S10 is located in the blower compartment and is mounted on the end of the blower support panel which divides the blower compartment from the heating compartment. S99 is located on the blower support panel which separates the second gas heat section from the outdoor condenser section. S99 is accessed through a patch plate on the condenser divider wall.

Figure 24 shows the location of production models August 2004 and later. S10 and S99 are located on the drip shield behind the blower housing. In this location S10 and S99 serve as both primary and secondary limit.

Primary limit S10 is wired to the main control panel A55 which energizes burner 1 control (A3), while primary limit S99 is wired to the gas 2 panel A58 which energizes burner 2 control (A12). Its N.C. contacts open to de-energize the ignition control when excessive temperature is reached in the blower compartment. At the same time, the N.O. contacts of S10 and S99 close energizing the blower relay coil K3 through control A55. If either limit trips the blower will be energized. Three limits with different actuating temperatures are used for limits S10 and S99 (standard and high first heat section use two different limits, while yet another limit is used for the second heat section). All three limits are SPDT N.C. auto-reset limits.

Limit set point are factory set and cannot be adjusted. If limit must be repalced, same type and set point must be used. See Lennox Repair Parts Handbook.

5-Secondary High Temperature Limits S21 & S100 (Production to July 2004)

S21 is the secondary high temperature limit for heat section one, while S100 is the secondary high temperature limit for heat section two. Like the primary limits, the secondary limits are located in the blower compartment. S21 and S100 are mounted on a horizontal panel located behind the blowers (see figure 23).

Secondary limit S21 is also wired to the main control panel A55, while secondary limit S100 is wired to the gas 2 panel A58. The secondary limits function in the same manner as the primary limits, but are factory set to actuate at different temperatures. The N.O. contacts of both S21 and S100 are connected to the blower relay coil K3 through control A55. If either limit trips the blower will be energized. All limits used are SPDT N.C. auto-reset limits.

LGA/LGC units date coded August 2004 or later will not be equipped with secondary limts S21 and S100.

Limit set point are factory set and cannot be adjusted. If limit must be repalced, same type and set point must be used. See Lennox Repair Parts Handbook.

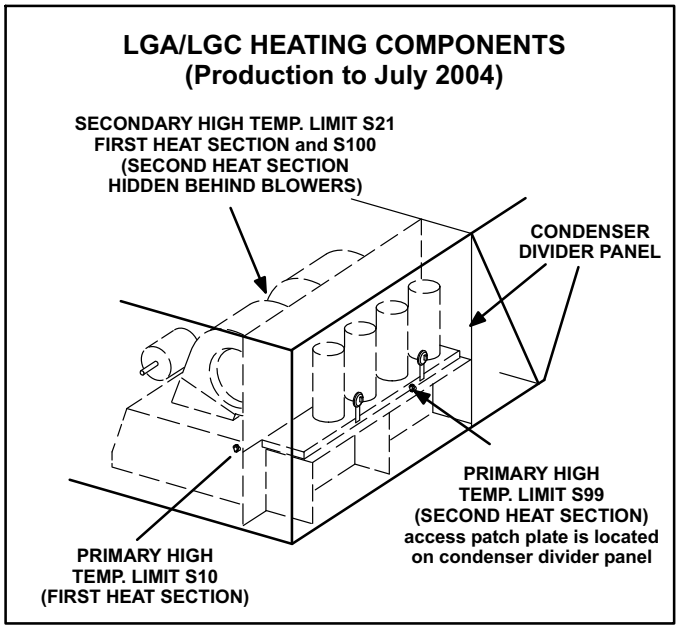


FIGURE 23

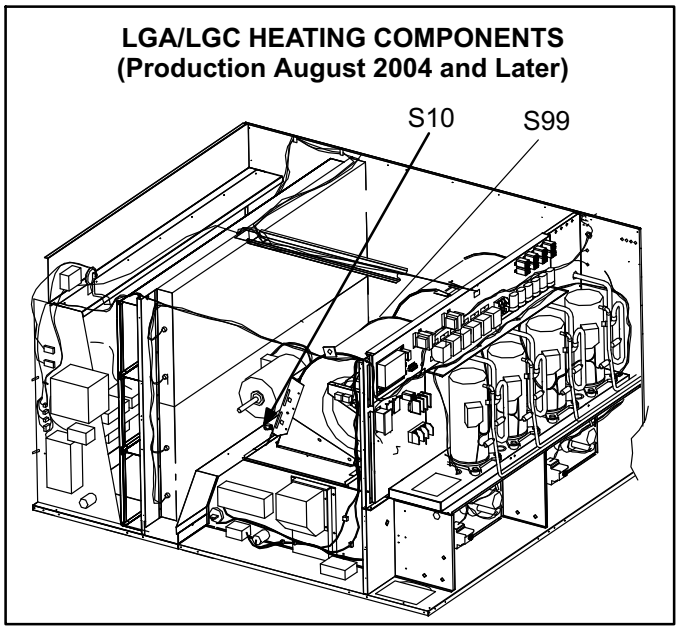


FIGURE 24

6-Flame Rollout Limits S47 and S69

Flame rollout limits S47 (first heat section) and S69 (second heat section) are SPST N.C. high temperature limits located just above the burner air intake opening in the burner enclosures (see figure 16). S47 is wired to the main control panel A55, while S69 is wired to the gas 2 panel A58. When S47 or S69 senses flame rollout (indicating a blockage in the combustion air passages), the corresponding flame rollout limit trips, and the ignition control immediately closes the gas valve.

For all units production to July 2004, limit S47 and S69 in standard heat units are factory preset to open at 250°F ± 12°F (121.1°C ± 6.7°C) on a temperature rise, while on high heat units both limits open at 270°F ± 12°F (132.2°C ± 6.7°C) on a temperature rise. All flame rollout limits are-manual reset. Production units August 2004; limit set point for both standard heat and high heat is 290°F ± 12°F (143.3°C ± 6.7°C) .

7-Combustion Air Prove Switches S18 & S45

Prove switches S18 (first heat section) and S45 (second heat section) are located in the compressor compartment. Switches are identical, SPST N.O. and monitor combustion air inducer operation. Switch S18 is wired to the main control panel A55, while S45 is wired to the gas 2 panel A58. The switches close on a *negative* pressure fall, allowing power to the ignition controls. The switches open on a on a pressure rise (less negative pressure). The combustion air prove switches are factory set and not adjustable. Table 3 shows prove switch settings for unit production dates before and after February 2009.

TABLE 3
S18 & S45 Prove Switch Settings

Unit Production Date	Close“ wc (Pa)	Open “ wc (Pa)
Feb 2009 & Later	0.25 ± 5 (62.3±12.4)	0.10±5 (24.8±12.4)
Prior to Feb 2009	0.46±5 (114±12.4)	0.31±5 (77.2±12.4)

8-Combustion Air Inducers B6 and B15

Combustion air inducers B6 (first heat section) and B15 (second heat section) are identical inducers which provide fresh air to the corresponding burners while clearing the combustion chamber of exhaust gases. The inducers begin operating immediately upon receiving a thermostat demand and are de-energized immediately when thermostat demand is satisfied.

460V units date coded 10-2003 and after use a 460V inducer motor and all other inducers use a 208/230V single-phase PSC motor and a 4.81in. x 1.25in. (122mm x 32mm) blower wheel. All motors operate at 3200RPM and are equipped with auto-reset overload protection. Inducers are supplied by various manufacturers. Ratings may vary by manufacturer. Specific inducer electrical ratings can be found on the unit rating plate.

All combustion air inducer motors are sealed and cannot be oiled. The inducer cannot be adjusted but can be disassembled for cleaning.

9-Combustion Air Motor Capacitors C3 & C11

The combustion air inducer motors in all LGA/LGC units require run capacitors. Capacitor C3 is connected to combustion air inducer B6 and C11 is connected to combustion air inducer B15. Both capacitors are rated at 3 MFD and 370VAC.

10-Gas Valves GV1 and GV3

Gas valves GV1 and GV3 are identical. The gas valves are two-stage redundant valves. Units are equipped with valves manufactured by White-Rodgers or Honeywell. For both valves first stage (low fire) is quick opening (on and off in less than 3 seconds). Second stage on the White-Rodgers is slow opening (on to high fire pressure in 40 seconds and off to low fire pressure in 30 seconds). Second stage on the Honeywell valve is quick opening. On a call for first stage heat (low fire), the valve is energized by the ignition control simultaneously with the spark electrode. On a call for second stage heat (high fire), the second stage operator is energized directly from A55 (GV1) and A58 (GV3). The White-Rodgers valve is adjustable for high fire only. The Honeywell valve is adjustable for both low fire and high fire. A manual shut-off knob is provided on the valve for shut-off. Manual shut-off knob immediately closes both stages without delay. Figure 25 shows White-Rodgers gas valve components. Table 4 shows factory gas valve regulation for LGA/LGC series units. See Page 7 for high altitude operating pressures.

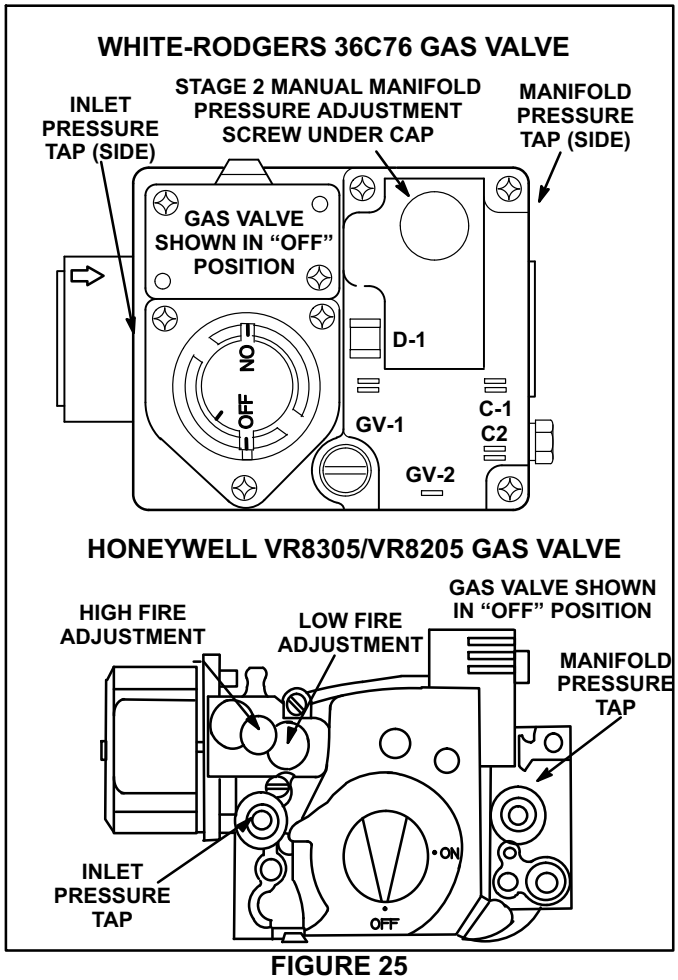


FIGURE 25

TABLE 4

GAS VALVE REGULATION FOR LGA/LGC UNITS			
Operating Pressure (outlet) Factory Setting			
Natural		L.P.	
Low	High	Low	High
1.6±0.2"W.C. 398±50Pa	3.7±0.3"W.C. 920±75Pa	5.5±0.3"W.C. 1368±75Pa	10.5±0.5"W.C. 2611±125Pa

11-Spark Electrodes

An electrode assembly is used for ignition spark. Two identical electrodes are used (one for each gas heat section). The electrode is mounted through holes on the left-most end of the burner support. The electrode tip protrudes into the flame envelope of the adjacent burner. The electrode assembly is fastened to burner supports and can be removed for service without removing any part of the burners.

During ignition, spark travels through the spark electrode (figure 26) and ignites the left burner. Flame travels from burner to burner until all are lit.

The spark electrode is connected to the ignition control by a 8 mm silicone-insulated stranded high voltage wire. The wire uses 1/4" (6.35 mm)female quick connect on the electrode end and female spark plug-type terminal on the ignition control end.

NOTE-IN ORDER TO MAXIMIZE SPARK ENERGY TO ELECTRODE, HIGH VOLTAGE WIRE SHOULD TOUCH UNIT CABINET AS LITTLE AS POSSIBLE.

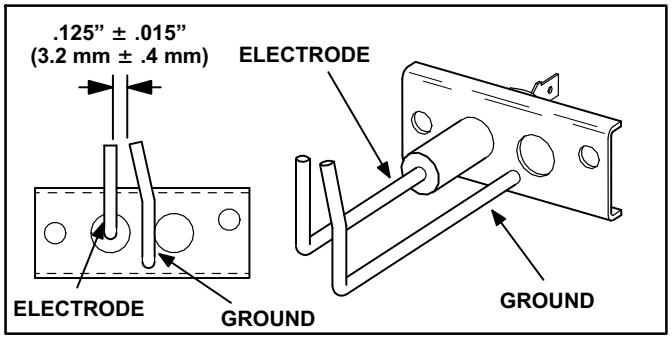


FIGURE 26

12-Flame Sensors

A flame sensor is located on the right side of each burner support. The sensor is mounted through a hole in the burner support and the tip protrudes into the flame envelope of the right most burner. The sensor assembly is fastened to burner supports and can be removed for service without removing any part of the burners. When flame is sensed by the flame sensor (indicated by microamp signal through the flame) sparking stops immediately. During operation, flame is sensed by current passed along the ground electrode (located on the spark electrode), through the flame and into the sensing electrode. The ignition control allows the gas valve to stay open as long as a flame signal (current passed through the flame) is sensed.

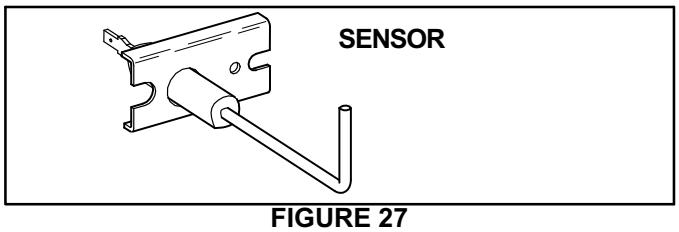


FIGURE 27

E-Optional Electric Heat Components

See ELECTRICAL/ELECTRIC HEAT DATA tables for possible LCA/LCC to EHA matchups and electrical ratings.

EHA parts arrangement is shown in figures 29 and 30. All electric heat sections consist of electric heating elements exposed directly to the airstream. Two electric heat sections (first section and second section) are used in all 30kW through 120kW heaters. See figure 28. Multiple-stage elements are sequenced on and off in response to thermostat demand.

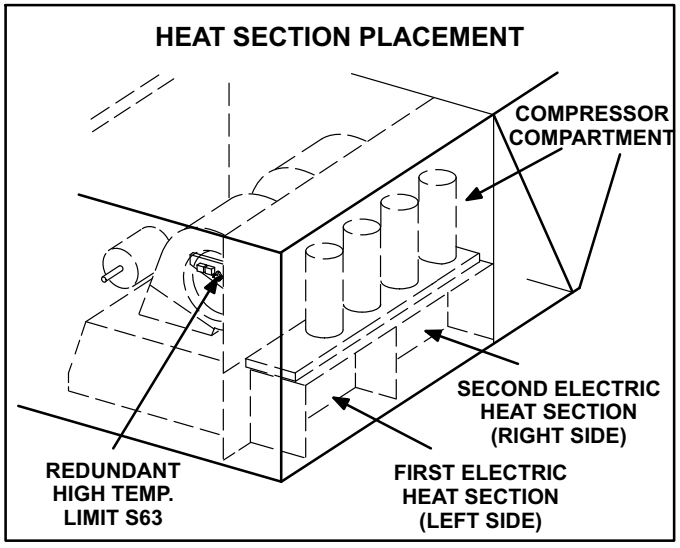


FIGURE 28

1-Main Control Box Components
A55, A60, K9, T2, and F4

The main control box (see figure 3) houses a few of the electric heat controls, such as: the main control module A55, second electric heat section control panel A60, electric heat control section for 45 - 120 kW (electric heat relay K9 and transformer T2), and unit fuse block F4. For a description of the components see section I-A.

2-Contactors K15, K16, K17 and K18

Contactors K15, K16, K17 and K18 are all three-pole double-break contactors located on the electric heat vestibule. K15 and K16 are located on the first electric heat section, while K17 and K18 are located on the second electric heat section. However, in the 30kW heaters, the first section houses all contactors and fuses. All contactors are equipped with a 24VAC coil. The coils in the K15 and K16 contactors are energized by the main panel A55, while the coil in the K17 and K18 contactors are energized by the electric heat 2 control panel A60. Contactors K15 and K17 energize the first stage heating elements, while K16 and K18 energize the second stage heating elements.

3-High Temperature Limits S15 and S107 (Primary)

S15 and S107 are SPST N.C. auto-reset thermostats located on the back panel of the electric heat section below the heating elements. S15 is the high temperature limit for the first electric heat section, while S107 is the high temperature limit for the second electric heat section. Both thermostats are identical and are wired in series with the first stage contactor coil. When either S15 or S107 opens, indicating a problem in the system, contactor K15 is de-energized. When K15 is de-energized, first stage and all subsequent stages of heat are de-energized. All LCA300H/360 electric heat section thermostats are factory set to open at 170°F ± 5°F (76.7°C ± 2.8°C) on a temperature rise and automatically reset at 130°F ± 6°F (54.4°C ± 3.3°C) on a temperature fall. The thermostats are not adjustable.

4-High Temperature Limit S63 (Redundant)

S63 is a SPST N.C. manual-reset thermostat located on the suction line bracket inside the blower compartment (see figure 28). S63 is a redundant temperature limit factory installed in all LCA / LCC units. Like the primary temperature limits, S63 is wired in series with the first stage contactor coil (K15). When S63 opens, all contactors (K15, K16, K17, K18) are de-energized. When the contactors are de-energized, first stage and all subsequent stages of heat are de-energized. The thermostat is factory set to open at 170°F ± 8°F (76.7°C ± 4.4°C) on a temperature rise and can be manually reset when the temperature falls below 160°F ± 6°F (71.1°C ± 3.3°C).

5-Terminal Strip TB3

Electric heat line voltage connections are made to terminal strip TB3 (or a fuse block on some models) located in the upper left corner of the electric heat vestibule.

6-Heating Elements HE1 through HE14

Heating elements are composed of helix wound bare nichrome wire exposed directly to the airstream. Three elements are connected in a three-phase arrangement. The elements in 208/230V units are connected in a “Delta” arrangement. Elements in 460 and 575V units are connected in “Wye” arrangement. See EHA wiring diagram in WIRING DIAGRAM AND OPERATION SEQUENCE section in back of this manual. Each stage is energized independently by the corresponding contactors located on the electric heat vestibule panel. Once energized, heat transfer is instantaneous. High temperature protection is provided by primary and redundant high temperature limits and overcurrent protection is provided by fuses.

7-Fuse F3

Fuse F3 are housed in a fuse block which holds three fuses. Each F3 fuse is connected in series with each leg of electric heat. Figure 30 and table 5 show the fuses used with each electric heat section. For simplicity, the service manual labels the fuses F3 - 1 through F3 - 8.

TABLE 5

LCA / LCC ELECTRIC HEAT SECTION FUSE RATING									
EHA QUANTITY & SIZE	**VOLTAGES**	**FUSE (3 each)**							
		F3 - 1	**F3 - 2**	**F3 - 3**	**F3 - 4**	**F3 - 5**	**F3 - 6**	**F3 - 7**	**F3 - 8**
(1) EHA360-15 & (1) EHA360S-15 (30 kW Total) or (1) EHA156-15 & (1) EHA156S-15	208/230V	60 Amp 250V	60 Amp 250V	----	----	----	----	----	----
	460V	50 Amp 600V	----	----	----	----	----	----	----
	575V	40 Amp 600V	----	----	----	----	----	----	----
(2) EHA360-22.5 (45 kW Total) or (2) EHA156-22.5	208/230V	50 Amp 250V	----	----	25 Amp 250V	50 Amp 250V	----	----	25 Amp 250V
	460V	25 Amp 600V	----	----	15 Amp 600V	25 Amp 600V	----	----	15 Amp 600V
	575V	20 Amp 600V	----	----	10 Amp 600V	20 Amp 600V	----	----	10 Amp 600V
(2) EHA150-30 (60 kW Total) or (2) EHA156-30	208/230V	50 Amp 250V	----	----	50 Amp 250V	50 Amp 250V	----	----	50 Amp 250V
	460V	25 Amp 600V	----	----	25 Amp 600V	25 Amp 600V	----	----	25 Amp 600V
	575V	20 Amp 600V	----	----	20 Amp 600V	20 Amp 600V	----	----	20 Amp 600V
(2) EHA360-45 (90 kW Total)	208/230V	50 Amp 250V	----	60 Amp 250V	60 Amp 250V	50 Amp 250V	----	60 Amp 250V	60 Amp 250V
	460V	25 Amp 600V	----	----	50 Amp 600V	25 Amp 600V	----	----	50 Amp 600V
	575V	20 Amp 600V	----	----	40 Amp 600V	20 Amp 600V	----	----	40 Amp 600V
(2) EHA150-60 (120 kW Total)	208/230V	60 Amp 250V	60 Amp 250V	60 Amp 250V	60 Amp 250V	60 Amp 250V	60 Amp 250V	60 Amp 250V	60 Amp 250V
	460V	50 Amp 600V	----	----	50 Amp 600V	50 Amp 600V	----	----	50 Amp 600V
	575V	40 Amp 600V	----	----	40 Amp 600V	40 Amp 600V	----	----	40 Amp 600V

EHA 30, 45, 60, 90 and 120 KW
ELECTRIC HEAT SECTION PARTS ARRANGEMENT

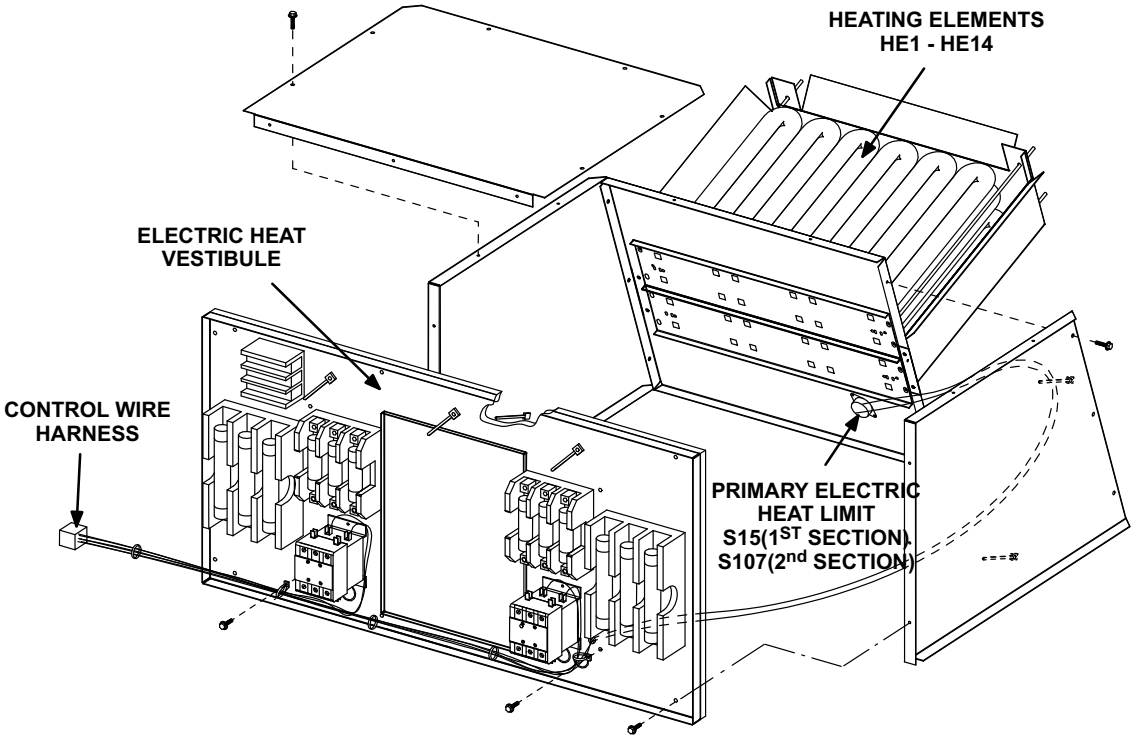
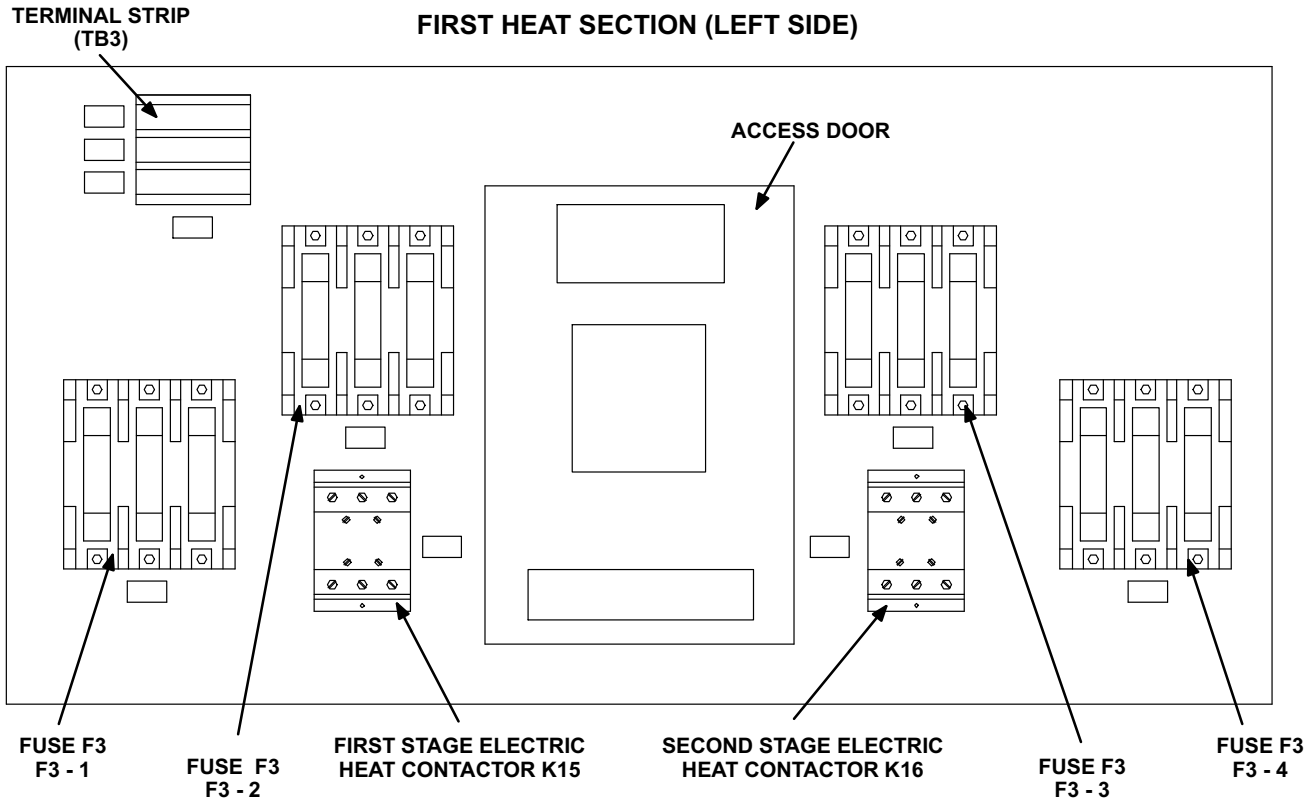


FIGURE 29

ELECTRIC HEAT VESTIBULE PARTS ARRANGEMENT



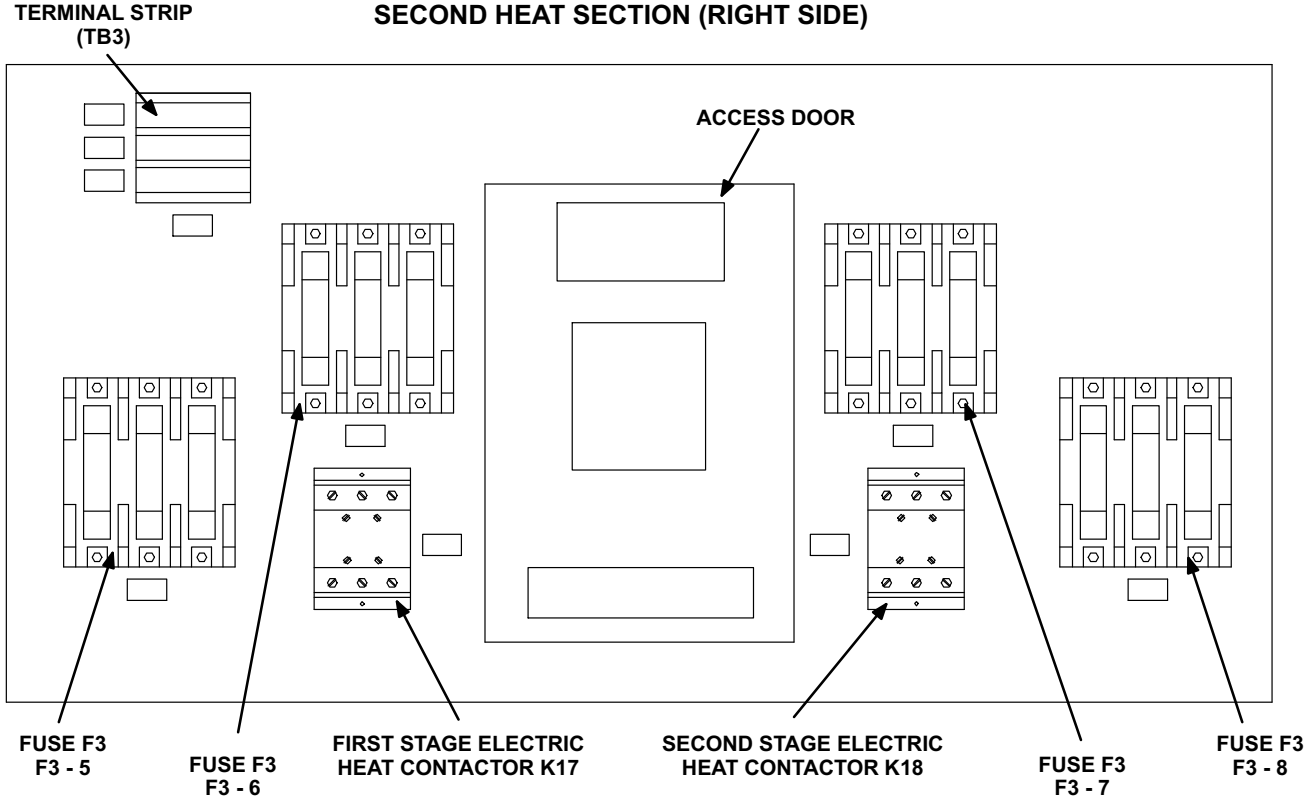


FIGURE 30

II-PLACEMENT AND INSTALLATION

Make sure the unit is installed in accordance with the installation instructions and all applicable codes. See accessories section for conditions requiring use of the optional roof mounting frame (LARMF18/36 or LARMFH30/36).

III-STARTUP - OPERATION - CHARGING

IMPORTANT-The crankcase heater must be energized for 24 hours before attempting to start compressor. Set thermostat so there is no demand to prevent compressors from cycling.

⚠IMPORTANT

Units contain either R22 or R410A refrigerant. Check the nameplate to determine the type of refrigerant before installation or servicing.

NOTE - These units must not be used as a "construction heater" at any time during any phase of construction. Very low return air temperatures, harmful vapors, and misplacement of the filters will damage the unit and its efficiency. Additionally, a unit which will be subject to cold temperatures when not in operation must have a vapor barrier installed to seal the duct connections. Failure to protect the unit from moisture laden air or harmful vapors (generated from the construction process and temporary combustion heating equipment) will cause corrosive condensation within the unit. Failure to properly protect the unit in this situation will cause electrical and electronic component failure and could affect the unit warranty status.

A-Preliminary Checks

1- Make sure that unit is installed in accordance with the installation instructions and applicable codes.

2- Inspect all electrical wiring, both field- and factory-installed, for loose connections. Tighten as required.

3- Check to ensure that refrigerant lines do not rub against the cabinet or against other refrigerant lines.

4- Check voltage at disconnect switch. Voltage must be within range listed on nameplate. If not, consult power company and have voltage condition corrected before starting unit.

5- Make sure filters are in place before start-up.

B-Cooling Start-Up

1- Initiate first and second stage cooling demands according to instructions provided with thermostat.

2- First-stage thermostat demand will energize compressors 1 and 2. Second-stage thermostat demand will energize compressors 3 and 4 (fourth compressor on 21 and 25 ton units). On units with an economizer, when outdoor air is acceptable, a first-stage demand will energize the economizer; a second-stage demand will energize compressors 1 and 2.

3- Units contain four refrigerant circuits or systems. Evaporator and condenser coil refrigerant circuits 1 and 2 make up stage 1 cooling. Evaporator and condenser refrigerant circuits 3 and 4 make up stage 2 cooling. See figures 8 and 9.

360H with 3 compressors -

Units contain three refrigerant circuits or systems. Evaporator and condenser coil refrigerant circuits 1 and 2 make up stage 1 cooling. Evaporator and condenser coil refrigerant circuit 3 makes up stage 2 cooling.

4- Each refrigerant circuit is separately charged with R22 or R410A refrigerant. See unit rating plate for correct amount of charge.

5- Refer to Cooling Operation and Adjustment section for proper method to check refrigerant charge.

Three Phase Scroll Compressor Voltage Phasing

Three phase scroll compressors must be phased sequentially to ensure correct compressor and blower rotation and operation. Compressor and blower are wired in phase at the factory. Power wires are color-coded as follows: line 1-red, line 2-yellow, line 3-blue.

1- Observe suction and discharge pressures and blower rotation on unit start-up.

2- Suction pressure must drop, discharge pressure must rise, and blower rotation must match rotation marking.

If pressure differential is not observed or blower rotation is not correct:

3- Disconnect all remote electrical power supplies.

4- Reverse any two field-installed wires connected to the line side of S48 disconnect or TB13 terminal strip. Do not reverse wires at blower contactor.

5- Make sure the connections are tight.

Discharge and suction pressures should operate at their normal start-up ranges.

R410A Refrigerant

Units charged with R410A refrigerant operate at much higher pressures than R22. The expansion valve and liquid line drier provided with the unit are approved for use with R410A. Do not replace them with components designed for use with R22.

R410A refrigerant is stored in a pink cylinder.

⚠IMPORTANT

Mineral oils are not compatible with R410A. If oil must be added, it must be a polyol ester oil.

Manifold gauge sets used with systems charged with R410A refrigerant must be capable of handling the higher system operating pressures. The gauges should be rated for use with pressures of 0-800 on the high side and a low side of 30" vacuum to 250 psi with dampened speed to 500 psi. Gauge hoses must be rated for use at up to 800 psi of pressure with a 4000 psi burst rating.

Turn off power to the unit.

C-Refrigerant Charge and Check

WARNING-Do not exceed nameplate charge under any condition.

This unit is factory charged and should require no further adjustment. If the system requires charge, *reclaim the charge, evacuate the system,* and *add required nameplate charge.*

*NOTE - System charging is not recommended below 60°F (15°C). In temperatures below 60°F (15°C) , the charge **must** be weighed into the system.*

If weighing facilities are not available, or to check the charge, use the following procedure:

IMPORTANT - Charge unit in standard cooling mode.

1- Attach gauge manifolds and operate unit in cooling mode until system stabilizes (approximately five minutes). Make sure all outdoor air dampers are closed.

2- Check each system separately with all stages operating.

3- Use a thermometer to accurately measure the outdoor ambient temperature.

4- Apply the outdoor temperature to tables 6 through 19 to determine normal operating pressures.

5- Compare the normal operating pressures to the pressures obtained from the gauges. Minor variations in these pressures may be expected due to differences in installations. Significant differences could mean that the system is not properly charged or that a problem exists with some component in the system. **Correct any system problems before proceeding.**

6- If discharge pressure is high, remove refrigerant from the system. If discharge pressure is low, add refrigerant to the system.

- Add or remove charge in increments.
- Allow the system to stabilize each time refrigerant is added or removed.

7- Use the following approach method along with the normal operating pressures to confirm readings.

TABLE 6
LGA/LCA Series 248 - R22 - CAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	158	68	156	72	157	75	156	72
75°F	181	69	183	77	190	82	190	80
85°F	207	70	211	77	218	83	217	80
95°F	235	71	241	78	248	84	248	82
105°F	269	74	273	80	282	86	284	86
115°F	304	76	310	82	320	87	322	85

*Outdoor fans may cycle on and off at this temperature.

TABLE 7
LGA/LCA Series 248 - R22 - VAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis. ±10 psig	Suc. ±5 psig	Dis. ±10 psig	Suc. ±5 psig	Dis. ±10 psig	Suc. ±5 psig	Dis. ±10 psig	Suc. ±5 psig
65°F*	150	71	150	75	158	79	156	81
75°F	181	73	180	77	190	81	190	82
85°F	212	75	210	79	220	82	220	83
95°F	242	78	241	80	252	83	254	84
105°F	274	80	272	82	285	84	288	86
115°F	306	82	302	84	315	85	320	87

*Outdoor fans may cycle on and off at this temperature.

TABLE 8
LGA/LCA Series 248 - R410A - CAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis. ±10 psig	Suc. ±5 psig	Dis. ±10 psig	Suc. ±5 psig	Dis. ±10 psig	Suc. ±5 psig	Dis. ±10 psig	Suc. ±5 psig
65°F*	248	120	250	134	250	139	251	136
75°F	284	122	287	137	288	143	290	139
85°F	324	125	329	139	329	145	332	142
95°F	367	127	374	141	375	147	379	145
105°F	415	131	425	144	425	150	430	147
115°F	468	139	478	146	475	152	485	150

*Outdoor fans may cycle on and off at this temperature.

R410A

TABLE 9
LGA/LCA Series 248 - R410A - VAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	250	131	235	135	255	137	255	137
75°F	295	133	285	138	305	140	305	140
85°F	340	136	335	140	355	143	355	143
95°F	390	139	385	143	400	146	405	146
105°F	440	141	435	146	450	148	455	148
125°F	485	144	480	149	500	151	505	151

*Outdoor fans may cycle on and off at this temperature.

TABLE 10
LGC/LCC Series 300H - R22 - CAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	159	69	162	72	154	73	150	69
75°F	182	70	189	74	187	77	186	72
85°F	217	72	222	76	222	79	216	74
95°F	252	73	255	77	255	80	252	75
105°F	287	75	289	79	290	82	289	77
115°F	322	77	322	81	325	84	324	79

*Outdoor fans may cycle on and off at this temperature.

TABLE 11
LGC/LCC Series 300H - R22 - VAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	170	70	165	71	176	74	180	76
75°F	200	71	195	73	208	75	210	77
85°F	230	73	224	75	238	77	242	78
95°F	258	74	254	77	270	78	275	79
105°F	288	76	285	79	300	80	308	81
115°F	318	77	315	80	330	81	340	82

*Outdoor fans may cycle on and off at this temperature.

TABLE 12
LGC/LCC Series 300H - R410A - CAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	242	126	230	130	250	137	245	130
75°F	295	129	285	133	300	140	295	133
85°F	345	132	335	136	355	142	350	136
95°F	400	135	390	138	405	145	405	139
105°F	450	138	440	141	460	147	460	142
115°F	500	141	490	144	515	150	515	146

*Outdoor fans may cycle on and off at this temperature.

TABLE 13
LGC/LCC Series 300H - R410A - VAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	260	122	250	127	270	129	270	129
75°F	305	125	300	130	315	131	325	132
85°F	355	128	350	133	360	134	375	134
95°F	400	131	400	136	410	137	425	137
105°F	450	135	450	139	460	139	475	140
115°F	500	138	500	142	510	142	525	143

*Outdoor fans may cycle on and off at this temperature.

TABLE 14
LGC/LCC Series 360 - R22 - CAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	175	66	170	70	180	74	170	70
75°F	205	68	200	72	210	75	205	72
85°F	240	70	230	73	245	77	240	73
95°F	270	71	265	75	280	78	275	75
105°F	300	73	300	76	310	79	310	76
115°F	335	75	330	78	345	81	345	78

*Outdoor fans may cycle on and off at this temperature.

TABLE 15
LGC/LCC Series 360 - R22 - VAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	176	67	168	71	180	69	182	72
75°F	208	69	200	73	210	71	215	74
85°F	238	71	230	74	242	73	250	75
95°F	270	73	262	76	275	75	282	77
105°F	300	75	294	77	308	76	315	79
115°F	330	77	328	79	340	78	350	80

*Outdoor fans may cycle on and off at this temperature.

TABLE 16
LGC/LCC Series 360 R410A - CAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig
65°F*	275	119	270	122	280	129	280	123
75°F	325	122	320	125	330	132	330	126
85°F	375	126	370	128	380	135	380	129
95°F	425	129	420	132	430	138	430	132
105°F	475	132	470	135	480	141	480	135
115°F	525	135	520	138	530	144	530	138

*Outdoor fans may cycle on and off at this temperature.

TABLE 17
LGC/LCC Series 360 R410A - VAV

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3		CIRCUIT 4	
	Dls ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dls ±10 psig	Suc ±5 psig	Dls ±10 psig	Suc ±5 psig
65°F*	260	115	255	122	270	124	280	123
75°F	315	119	310	125	330	127	330	126
85°F	360	122	360	129	380	130	390	129
95°F	415	126	410	132	430	133	440	133
105°F	460	130	465	136	480	136	490	136
115°F	515	134	515	139	535	139	550	140

*Outdoor fans may cycle on and off at this temperature.

TABLE 18
LGA/LCA360H CAV with 3 compressors - R22

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3	
	Dls ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dls ±10 psig	Suc ±5 psig
65°F*	164	63	176	76	178	75
75°F	191	64	207	77	206	76
85°F	219	66	233	78	234	77
95°F	250	68	270	80	271	78
105°F	284	70	303	81	301	79
115°F	320	72	346	82	345	81

*Outdoor fans may cycle on and off at this temperature.

TABLE 19
LGA/LCA360H CAV with 3 compressors R410A

Outdoor Coil Entering Air Temp	CIRCUIT 1		CIRCUIT 2		CIRCUIT 3	
	Dls ±10 psig	Suc ±5 psig	Dis ±10 psig	Suc ±5 psig	Dls ±10 psig	Suc ±5 psig
65°F*	286	111	307	125	302	123
75°F	320	115	351	130	336	129
85°F	363	119	397	132	382	133
95°F	413	122	448	135	430	137
105°F	465	126	501	137	478	140
115°F	523	130	561	142	534	141

*Outdoor fans may cycle on and off at this temperature.

D-Charge Verification - Approach Method

1- Using the same thermometer, compare liquid temperature to outdoor ambient temperature.

Approach Temperature = Liquid temperature minus ambient temperature.

2- Approach temperature should match values in table 20. An approach temperature greater than value shown indicates an undercharge. An approach temperature less than value shown indicates an overcharge.

3- Do not use the approach method if system pressures do not match pressures in tables 6 through 19. The approach method is not valid for grossly over or undercharged systems.

TABLE 20

Unit	Liquid Temp. Minus Ambient Temp.			
	1st Stage	2nd Stage	3rd Stage	4th Stage
248 R22 CAV/VAV	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)
248 R410A CAV	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)
248 R410A VAV	7°F±1 (3.9°C±0.5)	7°F±1 (3.9°C±0.5)	7°F±1 (3.9°C±0.5)	7°F±1 (3.9°C±0.5)
300H R22 CAV	6°F±1 (3.3°C±0.5)	7°F±1 (3.9°C±0.5)	6°F±1 (3.3°C±0.5)	6°F±1 (3.3°C±0.5)
300H R22 VAV	6°F±1 (3.3°C±0.5)	6°F±1 (3.3°C±0.5)	7°F±1 (3.9±0.5)	9°F±1 (5.0±0.5)
300H R410A CAV	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)
300H R410A VAV	5°F±1 (2.8°C±0.5)	5°F±1 (2.8°C±0.5)	5°F±1 (2.8°C±0.5)	8°F±1 (4.4°C±0.5)
360 R22 CAV	6°F±1 (3.3°C±0.5)	6°F±1 (3.3°C±0.5)	7°F±1 (3.9±0.5)	8°F±1 (4.4°C±0.5)
360 R22 VAV	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	10°F±1 (5.6°C±0.5)
360 R410A VAV	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)	10°F±1 (5.6°C±0.5)
360 R410A CAV	7°F±1 (3.9±0.5)	7°F±1 (3.9±0.5)	8°F±1 (4.4°C±0.5)	8°F±1 (4.4°C±0.5)
360H R22	8°F ± 1 (4.4'°C ± 0.5)	10°F ± 1 (5.6°C ± 0.5)	8°F ± 1 (4.4°C ± 0.5)	NA
360H R410A	12°F ± 1 (6.7°C ± 0.5)	14°F ± 1 (7.8°C ± 0.5)	13°F ± 1 (7.2°C ± 0.5)	NA

E-Heating Start Up

FOR YOUR SAFETY READ BEFORE LIGHTING

BEFORE LIGHTING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

Use only your hand to push in or turn the gas control knob. Never use tools. If the knob will not push in or turn by hand, do not try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

⚠WARNING

Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

⚠WARNING

Danger of explosion. Can cause injury or product or property damage. If overheating occurs or if gas supply fails to shut off, shut off the manual gas valve to the appliance before shutting off electrical supply.

⚠WARNING

SMOKE POTENTIAL

The heat exchanger in this unit could be a source of smoke on initial firing. Take precautions with respect to building occupants and property. Vent initial supply air outside when possible.

⚠WARNING

Danger of explosion. Can cause injury or death. Do not attempt to light manually. Unit has a direct spark ignition system.

This unit is equipped with an automatic spark ignition system. There is no pilot. In case of a safety shutdown, move thermostat switch to **OFF** and return the thermostat switch to **HEAT** to reset ignition control.

⚠WARNING

Danger of explosion and fire. Can cause injury or product or property damage. You must follow these instructions exactly.

Placing Unit In Operation

Gas Valve Operation for White Rodgers 36C Series Valve (Figure 31) and Honeywell VR8305Q (Figure 32) Series Gas Valve

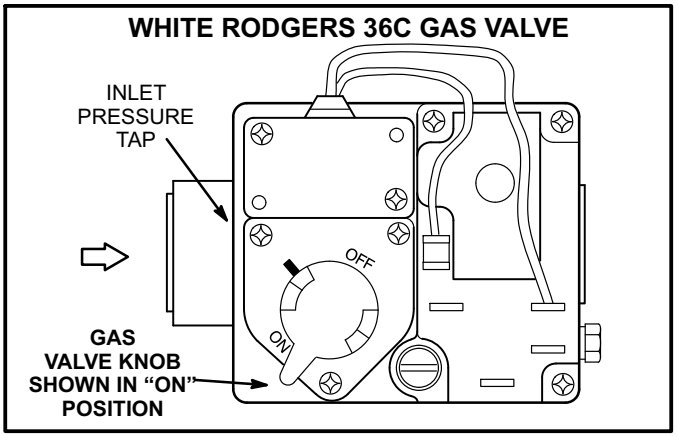


FIGURE 31

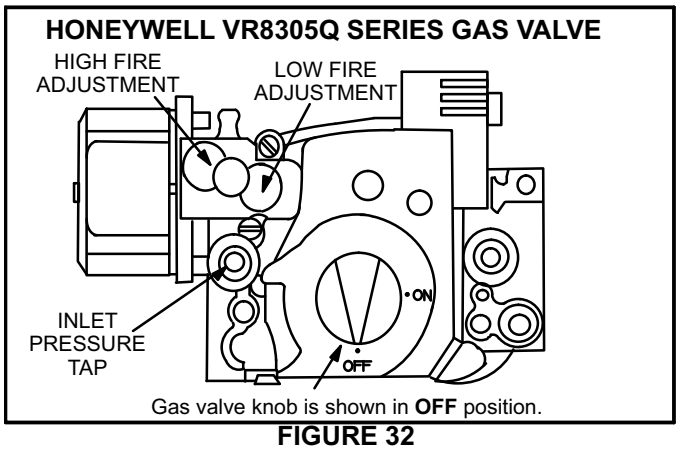


FIGURE 32

1- Set thermostat to lowest setting.

2- Turn off all electrical power to appliance.

3- This appliance is equipped with an ignition device which automatically lights the burner. Do **not** try to light the burner by hand.

4- Open or remove the heat section access panel.

5- Turn the knob on the gas valve clockwise ↷ to **OFF**. Do not force.

6- Wait five minutes to clear out any gas. If you then smell gas, **STOP!** Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas, go to the next step.

7- Turn the knob on the gas valve counterclockwise ↶ to **ON**. Do not force.

8- Close or replace the heat section access panel.

9- Turn on all electrical power to unit.

10- Set thermostat to desired setting.

11- The combustion air inducer will start. The burners will light within 40 seconds.

12- If the appliance does not light the first time (gas line not fully purged), it will attempt up to two more ignitions before locking out.

13- If lockout occurs, repeat steps 1 through 10.

14- If the appliance will not operate, follow the instructions "Turning Off Gas to Appliance" and call your service technician or gas supplier.

Turning Off Gas to Unit

1- If using an electromechanical thermostat, set to the lowest setting.

2- Before performing any service, turn off all electrical power to the unit.

3- Open or remove the heat section access panel.

4- Turn the knob on the gas valve clockwise ↷ to **OFF**. Do not force.

5- Close or replace the heat section access panel.

F-Safety or Emergency Shutdown

Turn off power to unit.

IV- SYSTEMS SERVICE CHECKS

A-LGA/LGC Heating System Service Checks

All LGA/LGC units are A.G.A and C.G.A. design certified without modification.

Before checking piping, check with gas company or authorities having jurisdiction for local code requirements. Refer to the LGA/LGC Installation, Operation and Maintenance instruction for more information.

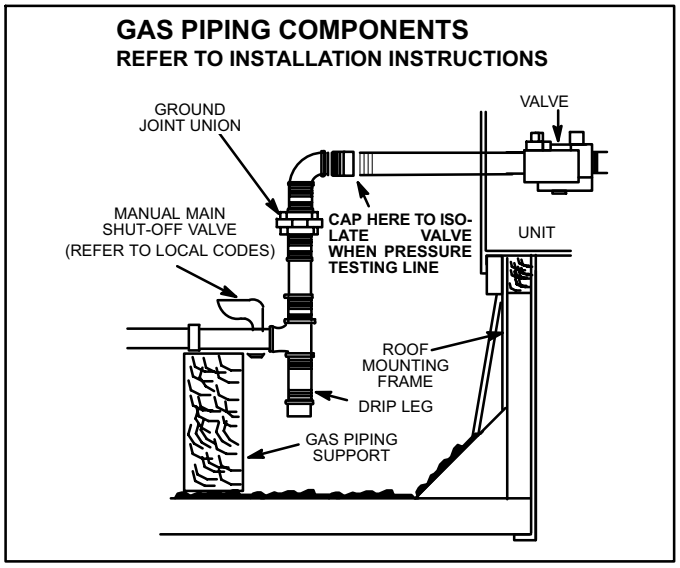


FIGURE 33

1-Gas Piping

Gas supply piping must not allow more than 0.5"W.C. (124.3 Pa) drop in pressure between the gas meter and the unit. Supply gas pipe must not be smaller than the unit gas connection. Refer to installation instructions for details.

2-Testing Gas Piping

NOTE-In case emergency shutdown is required, turn off the main manual shut-off valve and disconnect the main power to the unit. These controls should be properly labeled by the installer.

When pressure testing gas lines, the gas valve must be disconnected and isolated. Gas valves can be damaged if subjected to more than 0.5 psig [14"W.C. (3481 Pa)]. See figure 33.

When checking piping connection for gas leaks, use the preferred means. Common kitchen detergents can cause harmful corrosion on various metals used in gas piping. The use of specialty Gas Leak Detector is strongly recommended. It is available through Lennox under part number 31B2001. See CORP 8411-L10, for further details.

Do not use matches, candles, flame or any other source of ignition to check for gas leaks.

3-Testing Gas Supply Pressure

When testing gas supply pressure, connect test gauge to the inlet pressure tap on the gas valve (figure 31 and 32). Test supply gas pressure with unit firing at maximum rate (both stages energized). Make sure the reading falls within the range of the following values. Low pressure may result in erratic operation or "underfire." High pressure can result in permanent damage to the gas valve or "overfire." For natural gas units, operating pressure at the unit gas connection must be between 4.7"W.C. and 10.5"W.C. (1168 Pa and 2610 Pa). For L.P. gas units, operating pressure at the unit gas connection must be between 10.8"W.C. and 13.0"W.C. (2685 Pa and 3232 Pa).

On multiple unit installations, each unit should be checked separately while operating at maximum rate, beginning with the one closest to the supply gas main and progressing to the one furthest from the main. Multiple units should also be tested with and without the other units operating. Supply pressure must fall within the range listed in the previous paragraph.

4-Check and Adjust Manifold Pressure

After line pressure has been checked and adjusted, check manifold pressure. Move test gauge to the outlet pressure tap located on unit gas valve GV1. See table 4 in GAS HEAT COMPONENT section for proper manifold pressure and figure 25 for location of pressure tap on the gas valve.

The manifold pressure is factory set and should not require adjustment. If manifold pressure is incorrect and no other source of improper manifold pressure can be found, the valve must be replaced. Refer to figure 25 for location of gas valve (manifold pressure) adjustment screw.

All gas valves are factory regulated. The gas valve should completely and immediately cycle off in the event of gas or power failure. The manual shut-off knob can be used to immediately shut off gas supply.

⚠ CAUTION

For safety, connect a shut-off valve between the manometer and the gas tap to permit shut off of gas pressure to the manometer.

Manifold Adjustment Procedure

1- Connect test gauge to the outlet pressure tap on the gas valve. Start the unit (call for second stage heat) and allow five minutes for the unit to reach steady state.

2- While waiting for the unit to stabilize, notice the flame. The flame should be stable without flashback and should not lift from the burner heads. Natural gas should burn basically blue with some clear streaks. L.P. gas should burn mostly blue with some clear yellow streaks.

3- After allowing the unit to stabilize for five minutes, record the manifold pressure and compare to the values given for gas supply pressure in table 4.

⚠ CAUTION

Disconnect heating demand as soon as an accurate reading has been obtained.

5-Proper Gas Flow

To check for proper gas flow to burners, determine Btuh input from unit rating plate or the gas heating capacity tables in the SPECIFICATIONS section of this manual. Divide this input rating by the Btuh per cubic foot of available gas. Result is the number of cubic feet per hour required. Determine the flow of gas through gas meter for two minutes and multiply by 30 to get hourly flow of gas to the burners.

NOTE - To obtain accurate reading, shut off all other gas appliances connected to meter.

6-Inshot Burner

Burners are factory set for maximum air and cannot be adjusted. Always operate unit with access panel in place. A peep hole is furnished in the heating access panel for flame viewing. Natural gas should burn basically blue with some clear streaks. L.P. gas should burn mostly blue with some clear yellow streaks.

Figure 34 shows how to remove burner assembly.

1- Turn off power to unit and shut off gas supply.
2- Remove screws holding the burner support cap.
3- Slide each burner off its orifice.
4- Clean and reassemble (reverse steps 1-3).
5- Be sure to secure all wires and check plumbing.
6- Turn on power to unit. Follow lighting instructions attached to unit and operate unit in heating mode. Check burner flames. They should be blue with yellow streaks.

7-Spark Electrode Gap

The spark electrode assembly can be removed for inspection by removing two screws securing the electrode assembly and sliding it out of unit.

For proper unit operation, electrodes must be positioned and gapped correctly.

Spark gap may be checked with appropriately sized twist drills or feeler gauges. Disconnect power to the unit and remove electrode assembly. The gap should be between 0.125" ± 0.015" (3.2 mm ± .4 mm). See figure 26.

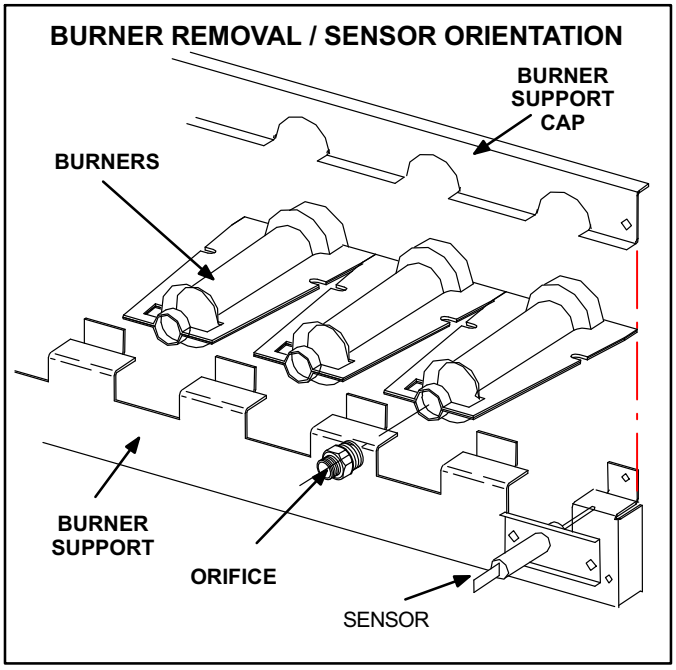


FIGURE 34

8-Heat Exchanger

To Access or Remove Heat Exchanger From Unit:

1- Turn off gas and electric power.
2- Remove access panel(s) and unit center mullion.
3- Remove gas valve, manifold assembly and burners.
4- Remove combustion air blower and flue box. Pay careful attention to the order in which gaskets and orifice are removed.
5- Support heat exchanger (to prevent it from falling when final screws are removed.)
6- Remove screws supporting heat exchanger and slide out.
7- To install heat exchanger, reverse procedure. Be sure to secure all wires and check plumbing and burner plate for airtight seal. Screws must be torqued to 35 in.-lbs. (155.7 N) to ensure proper operation.

9-Flame Sensing

Flame current is an electrical current which passes from the ignition control through the sensor electrode during unit operation. The current passes from the sensor through the flame to the ground electrode (located on the flame electrode) to complete a safety circuit. See table 21 for flame signal range. The electrodes should be located so the tips are at least 1/2" (12.7 mm) inside the flame envelope. Do not bend electrodes. To measure flame current, follow the procedure below:

NOTE-Electrodes are not field adjustable. Any alterations to the electrode may create a hazardous condition that can cause property or personal injury.

1- Disconnect power to unit.

2- Remove lead from sensing electrode and install a 0-50DC microamp meter in series between the sensing electrode and the sensing lead.

3- Reconnect power and adjust thermostat for heating demand.

4- When flame is established compare reading to table 21. Do not bend electrodes.

5- Disconnect power to unit before disconnecting meter. Make sure sensor wire is securely reconnected before reconnecting power to unit.

TABLE 21

Manufacturer	Nominal Signal	Drop Out
RAM	1.7-3.6	0.5
JOHNSON	0.5-1.0	.09
FENWAL	1.7-3.6	0.7

NOTE-If the meter scale reads 0, the leads are reversed. Disconnect power and reconnect leads for proper polarity.

10-Combustion Air Inducer

The combustion air inducer is factory set and is not field adjustable. However, operation should be monitored to ensure proper operation. The combustion air inducer is used to draw fresh air into the combustion chamber while simultaneously expelling exhaust gases. The inducer operates throughout the heating cycle.

On a heating demand, the ignition control is energized by the main control module A55. The ignition control then allows 30 to 40 seconds for the combustion air inducer to vent exhaust gases from the burners. When the combustion air inducer is purging the exhaust gases, the combustion air prove switch is closing proving that the combustion air inducer is operating before allowing the ignition control to energize. When the combustion air prove switch is closed and the delay is over, the ignition control activates the first stage operator of the gas valve (low fire), the spark and the flame sensing electrode. Sparking stops immediately after flame is sensed.

B-Cooling System Service Checks

All units are factory charged and require no further adjustment; however, charge should be checked periodically using the normal operating pressure method.

1-Gauge Manifold Attachment

Attach high pressure line to discharge line schrader port and the low pressure line to the suction line schrader port.

NOTE-When unit is properly charged discharge line pressures should approximate those in tables 6 through 19.

V-MAINTENANCE

⚠ CAUTION

Electrical shock hazard. Turn off power to unit before performing any maintenance, cleaning or service operation on the unit.

A-Filters

All units are equipped with twelve 20” x 20” x 2” (508mm x 508mm x 51mm) pleated throw-away type filters. Filters may be accessed through the economizer / filter access door (left of the blower door). All filters are removed by pulling on the pull tab, located on the bottom of each row of filters. Filters should be checked monthly (or more frequently in severe use) and cleaned or replaced regularly. Take note of the “AIR FLOW DIRECTION” marking on the filter frame when re-installing.

NOTE-Filters must be U.L.C. certified or equivalent for use in Canada.

⚠ CAUTION

Be careful when servicing unit to avoid accidental contact with sharp metallic edges which may cause personal injury.

B-Lubrication

All motors and blower wheels used are prelubricated; no further lubrication is required.

C-Supply Air Blower Wheel

Annually inspect supply air blower wheel for accumulated dirt or dust. Turn off power before attempting to remove access panel or to clean blower wheel. If balancing clips are removed, make sure they are reinstalled in the same location when cleaning is completed.

NOTE-Do not lose balancing clips.

D-Evaporator Coil

Inspect and clean coil at beginning of each season. Clean using mild detergent or commercial coil cleanser. Check condensate drain pan and line, if necessary. Flush coil and condensate drain with water taking care not to get insulation, filters and return air ducts wet. Check connecting lines and coil for evidence of oil and refrigerant leaks.

E-Condenser Coil

Clean condenser coil annually with detergent or commercial coil cleaner and inspect monthly during the cooling season. Check connecting lines and coil for evidence of oil and refrigerant leaks.

NOTE-If owner complains of insufficient cooling, the unit should be gauged and refrigerant charge checked. Refer to Gauge Manifold Attachment and Charging sections in this manual.

F-Electrical

1- Check all wiring for loose connections.
2- Check for correct voltage at unit (unit operating).
3- Check amp-draw on both condenser fan motor and blower motor.
Fan Motor Rating Plate ____ Actual _____
Indoor Blower Motor Rating Plate____ Actual____

VI-ACCESSORIES

The accessories section describes the application of most of the optional accessories which can be factory or field installed to either the LGA/LGC/LCA/LCC units.

A-LARMF18/36-14, 24 or LARMH30/36-30,41 Mounting Frames

When installing the LGA/LGC/ LCA/LCC units on a combustible surface for downflow discharge applications, the Lennox LARMF18/36 14-inch or 24-inch (356 mm or 610mm) height roof mounting frame is used. For horizontal discharge applications, use LARMFH30/36 30-inch or 41-inch (762mm or 1041mm) height roof mounting frame. This frame converts unit from down-flow to horizontal air flow. The 14 and 24 inch (356 and 610mm) downflow and 41 inch (1041mm) horizontal frame meets National Roofing Code requirements. The roof mounting frames are recommended in all other applications but not required. If the units are not mounted on a flat (roof) surface, they MUST be supported under all edges and under the middle of the unit to prevent sagging. The units MUST be mounted level within 1/16" per linear foot or 5mm per meter in any direction.

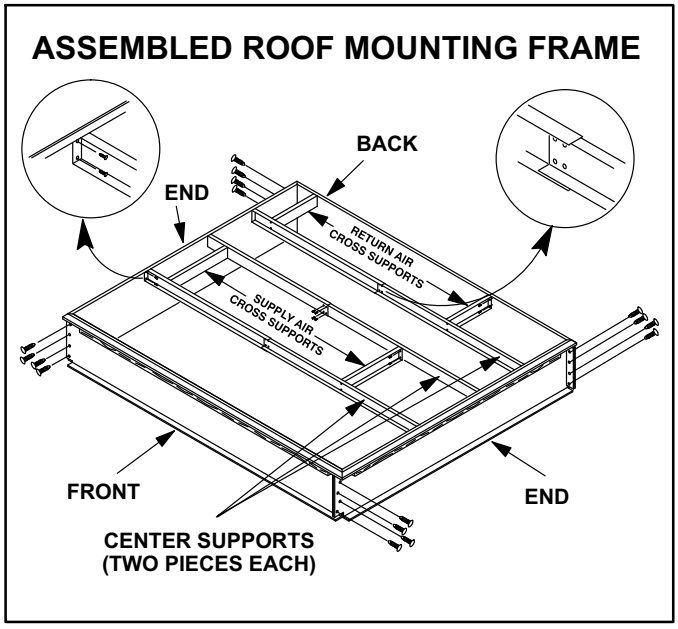


FIGURE 35

The assembled LARMF18/36 mounting frame is shown in figure 35. Refer to the roof mounting frame installation instructions for details of proper assembly and mounting. The roof mounting frame MUST be squared to the roof and level before mounting. Plenum system MUST be installed before the unit is set on the mounting frame. Typical roof curbing and flashing is shown in figure 36. Refer to the roof mounting frame installation instructions for proper plenum construction and attachment.

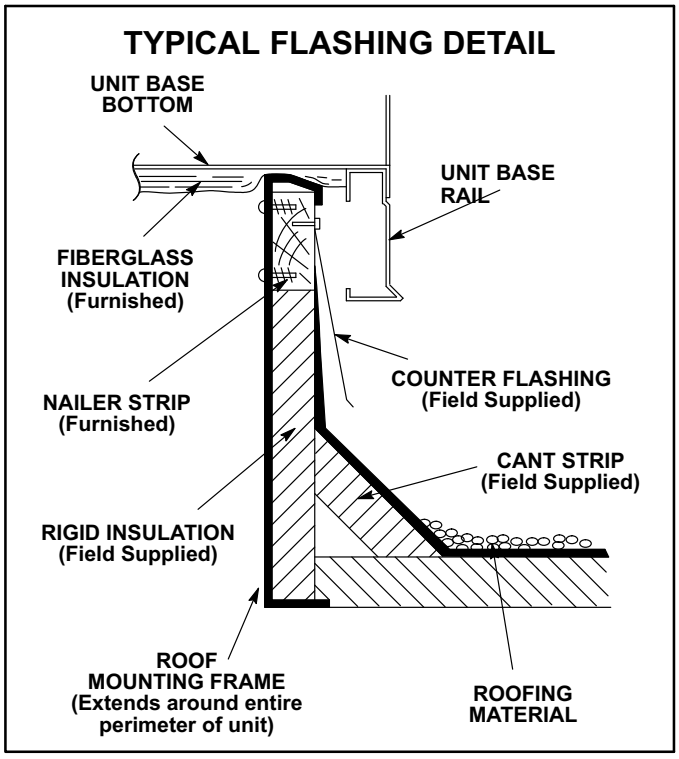


FIGURE 36

B-Transitions

Optional supply/return transitions LASRT30/36 are available for use with LGA/LGC/LCA/LCC series units utilizing optional LARMF18/36 roof mounting frame. Transition must be installed in the LARMF18/36 mounting frame before mounting the unit to the frame. Refer to the manufacturer's instructions included with the transition for detailed installation procedures.

C-Supply and Return Diffusers

Optional flush mount diffuser/return FD11 and extended mount diffuser/return RTD11 are available for use with the LGA/LGC/LCA/LCC units. Refer to manufacturer's instructions included with transition for detailed installation procedures.

D-LAOAD(M) 30/36Outdoor Air Dampers

LAOAD(M)30/36 consists of a set of dampers which may be manually or motor (M) operated to allow up to 25 percent outside air into the system at all times (see figure 37). Either air damper can be installed in LGA/LGC/LCA/LCC units. Washable filter supplied with the outdoor air dampers can be cleaned with water and a mild detergent.It should be sprayed with Filter Handicoater when dry prior to reinstallation. Filter Handicoater is R.P. Products coating no. 418 and is available as Lennox Part No. P-8-5069.

E-LAREMD30/36 Economizer

(Field or Factory Installed)

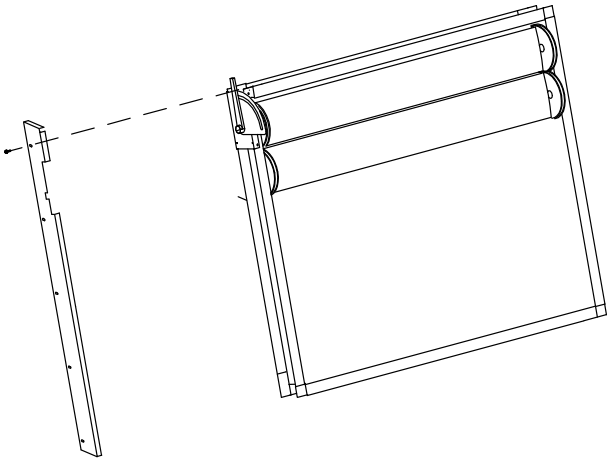
The optional LAREMD30/36 economizer can be used with LGA/LGC/LCA/LCC units in downflow and horizontal air discharge applications. The LAREMD30/36 economizer uses outdoor air for free cooling when temperature and/or humidity is suitable. An economizer hood is required and must be ordered separately.

NOTE - Gravity exhaust dampers are required with power exhaust.

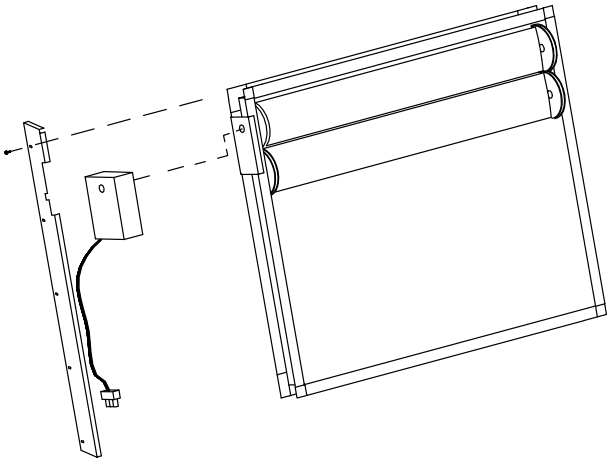
The economizer is controlled by the economizer control module A56 which connects to the main control module A55. Both boards are part of the Integrated Modular Control (IMC) which controls "L" series unit operation.

The economizer will operate in one of four modes. Each mode requires a different EM1 economizer DIP switch setting. Each mode also requires different sensors.

LAOAD 30/36 MANUAL OUTDOOR AIR DAMPER



LAOAD(M) MOTORIZED OUTDOOR AIR DAMPER



FILTER BRACKET SIDE VIEW

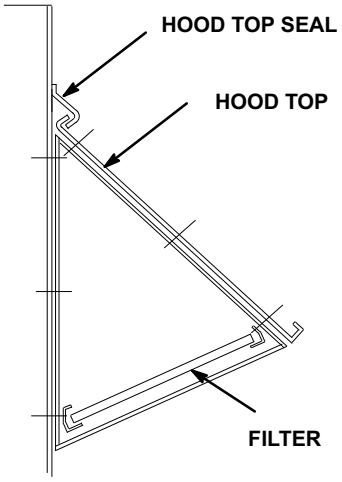


FIGURE 37

1-"TMP" MODE (SENSIBLE TEMPERATURE)

In the "TMP" mode, the IMC uses input from the factory installed RT6 Supply Air Sensor, RT16 Return Air Sensor, and RT17 Outdoor Air Sensor to determine suitability of outside air and economizer damper operation. When outdoor sensible temperature is less than return air sensible temperature, outdoor air is used for cooling. This may be supplemented by mechanical cooling to meet comfort demands. This application does not require additional optional sensors.

2-"ODE" MODE (OUTDOOR ENTHALPY)

The "ODE" or outdoor enthalpy mode requires a factory or field-provided and -installed Honeywell C7400 enthalpy sensor (16K96). The sensor monitors outdoor air temperature and humidity (enthalpy). When outdoor air enthalpy is below the enthalpy control setpoint, the economizer modulates to allow outdoor air for free cooling.

3-"DIF" MODE (DIFFERENTIAL ENTHALPY)

The "DIF" or differential enthalpy mode requires two factory or field-provided and -installed Honeywell C7400 enthalpy sensors (16K97). One sensor is installed in the outside air opening and the other sensor is installed in the return air opening. When the outdoor air enthalpy is below the return air enthalpy, the economizer opens to bring in outdoor air for free cooling.

4-"GLO" MODE (GLOBAL)

Global Mode - The "GLO" or global mode is used with an energy management system which includes a global control feature. Global control is used when multiple units (in one location) respond to a single outdoor air sensor. Each energy management system uses a specific type of outdoor sensor which is installed and wired by the controls contractor.

Motorized Outdoor Air Damper - The "GLO" mode is also used when a motorized outdoor air damper is installed in the system.

NOTE - All economizer modes of operation will modulate dampers to 55° F (13° C) supply air.

F-LAGED(H)30/36 Gravity Exhaust Dampers

LAGED(H)30/36 dampers are used with LGA/LGC/LCA/LCC series units. LAGED dampers are used in downflow and LAGEDH are used in horizontal air discharge applications. LAGED gravity exhaust dampers are installed in the return air cokpartment of the unit (see figure 38). The dampers must be used any time power exhaust fans are applied to LGA/LGC/LCA/LCC series units and are optional with an economizer.

LAGEDH horizontal gravity exhaust dampers are installed in the return air duct. Gravity exhaust dampers allow exhaust air to be discharged from the system when an economizer and/or power exhaust is operating. Gravity exhaust dampers also prevent outdoor air infiltration during unit off cycle. See installation instructions for more detail.

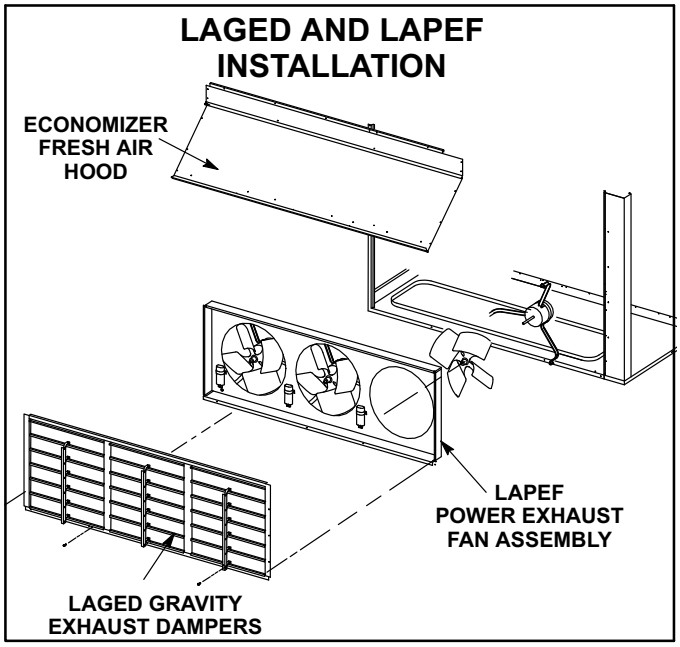


FIGURE 38

G-LAPEF30/36 Power Exhaust Fans

LAPEF30/36 power exhaust fans are used with LGA/LGC/LCA/LCC series units. LAPEF (requires optional down-flow gravity exhaust dampers and LAREMD economizer) is used in downflow applications only. Power exhaust fans provide exhaust air pressure relief and run when return air dampers are closed and supply air blowers are operating. Figure 38 shows location of the LAPEF. See installation instructions for more detail.

H-Optional Cold Weather Kit (Canada only)

Electric heater is available to automatically control the minimum temperature in the gas burner compartment. Heater is C.G.A. certified to allow cold weather operation of unit down to -60°F (-50°C).

The kit includes the following parts:

1- Transformer (T20) is a 600V to 120/240V stepdown transformer mounted in the blower compartment.

2- T20 has two in line fuses (F20), one on each leg of the transformer. Both are rated at 15 amps.

3- The strip heater (HR6) is located as close as possible to the gas valve. It is wired in series with T20. The strip heater is rated at 500 Watts.

4- A thermostat mounting box is installed on the vestibule of the heating compartment. Included in the box are the following thermostat switches:

a - Thermostat switch (S59) is an auto-reset SPST N.C. switch which opens on a temperature drop. The switch is wired in series with 24v power and the combustion air blower switch. When the temperature drops below -20°F (-28.9°C) the switch opens and the gas heat section is de-energized. The switch automatically resets when the heating compartment temperature reaches 10°F (-12.2°C).

b - Thermostat switch (S60) is an auto-reset SPST N.C. switch which opens on a temperature rise. The switch is wired in series with HR6 and T20. When the temperature rises above 20°F (-6.7°C) the switch opens and the electric heater is de-energized. The switch automatically resets when the heating compartment temperature reaches -10°F (-23.3°C).

c -Thermostat switch (S61) is an auto-reset SPST N.O. switch which closes on a temperature drop. The switch is wired in series with HR6 and T20. When temperature drops below 20°F (-6.7°C) the switch closes and electric heater is energized. The switch automatically opens when heating compartment temperature reaches 50°F (10°C).

I-Control Systems

Three different types of control systems may be used with the LGA/LGC/LCA/LCC series units. All thermostat wiring is connected to terminal block TB1 located in the control box of the unit. Each thermostat has additional control options available. See thermostat installation instructions for more detail.

1- Electro-mechanical thermostat (13F06)

The electro-mechanical thermostat is a two stage heat / two stage cool thermostat with dual temperature levers. A non-switching or manual system switch subbase may be used.

2- Electronic thermostat (see price book)

Any two stage heat / two stage cool electronic thermostat may be used.

3- Honeywell T7300 thermostat (81G59)

The Honeywell T7300 thermostat is a programmable, internal or optional remote temperature sensing thermostat. The T7300 provides occupied and unoccupied changeover control.

J-Smoke Detectors A17 and A64

Photoelectric smoke detectors are a factory installed option. The smoke detectors can be installed in the supply air section (A64), return air section (A17), or in both the supply and return air section. Wiring for the smoke detectors are shown on the temperature control section (C2) wiring diagram in back of this manual.

K-Blower Proving Switch S52

The blower proving switch monitors blower operation and locks out the unit in case of blower failure. The switch is N.O. and closes at .14" W.C. (34.9 Pa) The switch is mounted on the upper left hand corner of the blower deck. Wiring for the blower proving switch is shown on the temperature control section (C2) wiring diagram in back of this manual.

L-Dirty Filter Switch S27

The dirty filter switch senses static pressure increase indicating a dirty filter condition. The switch is N.O. and closes at 1" W.C. (248.6 Pa) The switch is mounted on the top filter channel corner. Wiring for the dirty filter switch is shown on the temperature control section (C2) wiring diagram in back of this manual. Actuation of this switch does not affect unit operation.

M-Indoor Air Quality (CO_2) Sensor A63

The indoor air quality sensor monitors CO_2 levels and reports the levels to the main control module A55. The board adjusts the economizer dampers according to the CO_2 levels. The sensor is mounted next to the indoor thermostat or in the return air duct. Refer to the indoor air quality sensor installation instructions for proper adjustment. Wiring for the indoor air quality switch is shown on the temperature control section (C2) wiring diagram in back of this manual.

N-LP / Propane Kit

Two natural to LP / propane gas changeover kits are required for gas conversion on LGA/LGC units (one for each gas heat section). The kit includes manifold adjustment spring, manifold cap, eleven burner orifices, and three stickers. For more detail refer to the natural to LP gas changover kit installation instructions.

O-Supply Air VFD

Units may contain a supply air blower equipped with a variable frequency drive A96 (VFD) which varies supply air CFM. As duct static increases, the supply air volume will decrease. As duct static decreases, the supply air volume will increase.

The IMC uses input from a pressure transducer (A30) to maintain a 1.0" w.c. (default) static pressure. Refer to the IMC manual ECTO 0.04 and 0.05 to adjust the static pressure setpoint.

The pressure transducer is shipped in a box in the blower compartment. Install the transducer according to manufacturer's instructions.

Note -Make sure the transducer is installed in the main duct at least 2/3 of the distance away from the unit.

The supply air VFD (A96) is located near the compressors. See figure 39.

Excessive Duct Static

The IMC will lock-out the unit for 5 minutes if static pressure exceeds 2.0”w.c. for 20 seconds. The IMC will permanently shut down the unit after three occurrences. See IMC ECTO 5.02, 0.21, and 0.22 to adjust default values.

Optional field-installed high pressure switch (S155) will de-energize the unit above static pressure setpoint. Refer to B3 blower VFD wiring diagram. Set cut-out pressure at 2”w.c. unless otherwise specified. Switch must be manually reset.

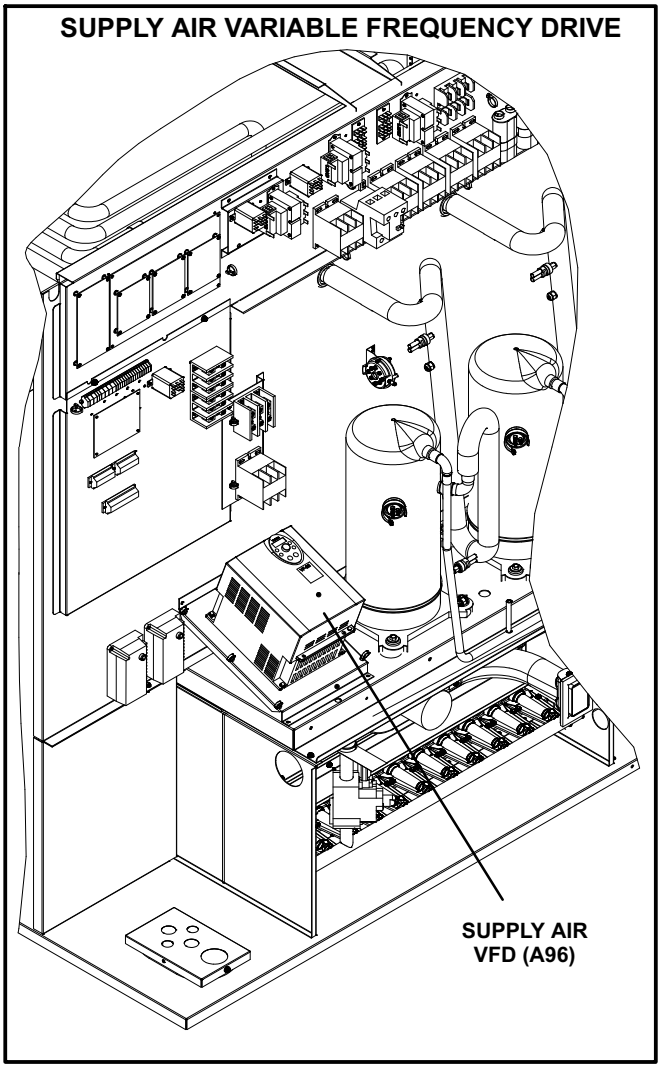


FIGURE 39

Supply Air VFD By-Pass Plug (Optional)

The supply air VFD may be by-passed using jack/plug connections. Locate J/P198 connectors in control box area under the relays. Disconnect J198 from P198 and connect J204 or J206 to P198. See figure 40. Blower will operate in constant air volume mode.

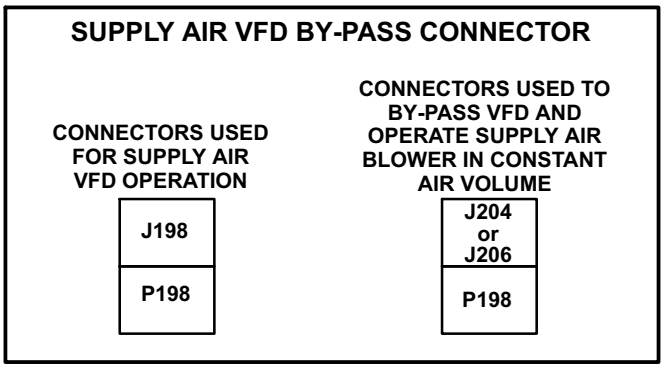
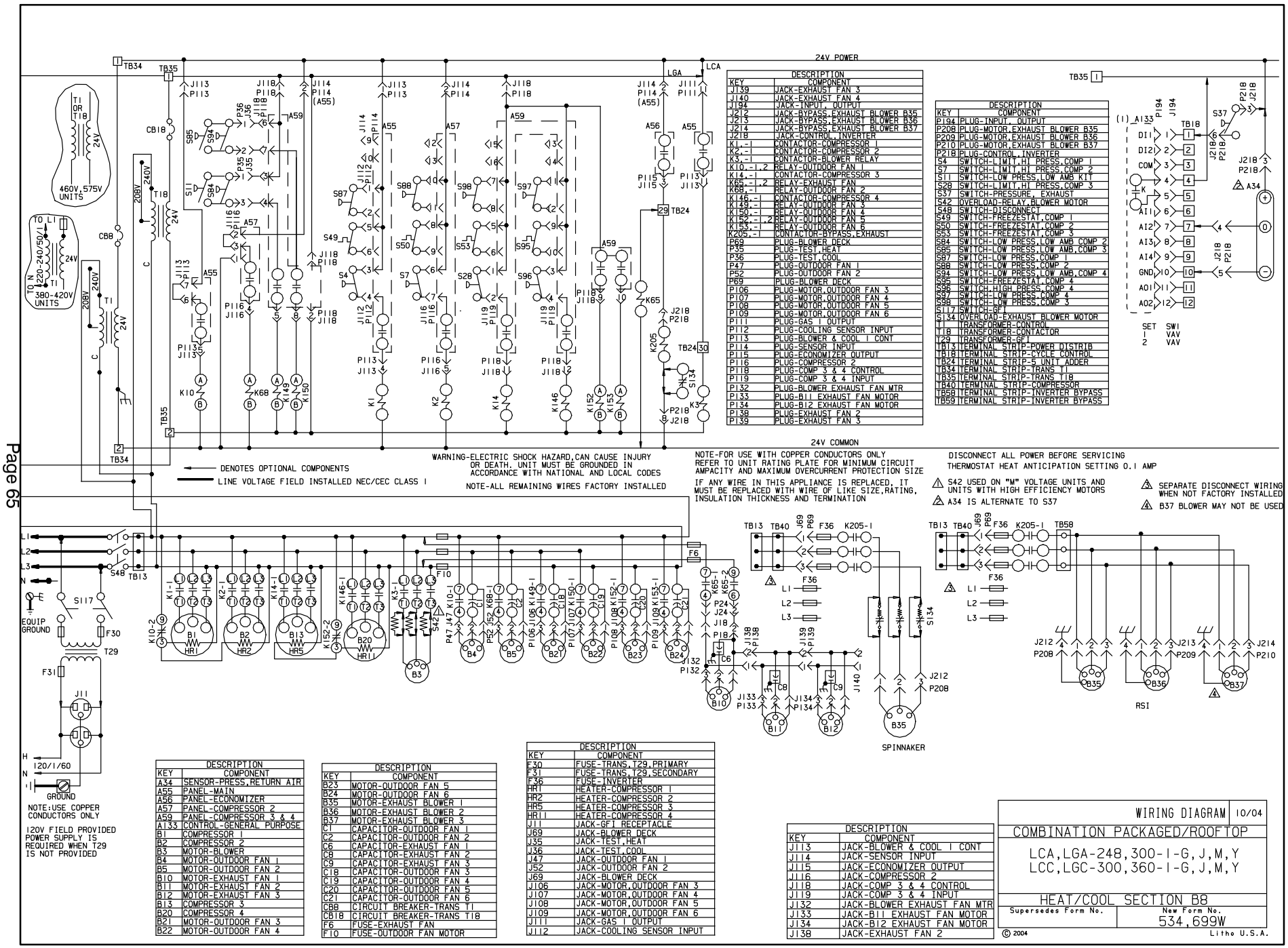


FIGURE 40

VII-WIRING DIAGRAMS AND OPERATION SEQUENCE

The following pages contain the wiring diagrams for LGA/LGC/LCA/LCC248/360 series units. An economizer and thermostat are also shown. Each wiring diagram is followed by a sequence of operation.



KEY	DESCRIPTION COMPONENT
J139	JACK-EXHAUST FAN 3
J140	JACK-EXHAUST FAN 4
J194	JACK-INPUT, OUTPUT
J212	JACK-BYPASS,EXHAUST BLOWER B35
J213	JACK-BYPASS,EXHAUST BLOWER B36
J214	JACK-BYPASS,EXHAUST BLOWER B37
J218	JACK-CONTROL,INVERTER
K1,-1	CONTACTOR-COMPRESSOR 1
K2,-1	CONTACTOR-COMPRESSOR 2
K3,-1	CONTACTOR-BLOWER RELAY
K10,-1,2	RELAY-OUTDOOR FAN 1
K14,-1	CONTACTOR-COMPRESSOR 3
K65,-1,2	RELAY-EXHAUST FAN
K68,-1	RELAY-OUTDOOR FAN 2
K146,-1	CONTACTOR-COMPRESSOR 4
K149,-1	RELAY-OUTDOOR FAN 3
K150,-1	RELAY-OUTDOOR FAN 4
K152,-1,2	RELAY-OUTDOOR FAN 5
K153,-1	RELAY-OUTDOOR FAN 6
K205,-1	CONTACTOR-BYPASS,EXHAUST
P69	PLUG-BLOWER DECK
P35	PLUG-TEST,HEAT
P36	PLUG-TEST,COOL
P47	PLUG-OUTDOOR FAN 1
P52	PLUG-OUTDOOR FAN 2
P69	PLUG-BLOWER DECK
P106	PLUG-MOTOR,OUTDOOR FAN 3
P107	PLUG-MOTOR,OUTDOOR FAN 4
P108	PLUG-MOTOR,OUTDOOR FAN 5
P109	PLUG-MOTOR,OUTDOOR FAN 6
P111	PLUG-GAS 1 OUTPUT
P112	PLUG-COOLING SENSOR INPUT
P113	PLUG-BLOWER & COOL 1 CONT
P114	PLUG-SENSOR INPUT
P115	PLUG-ECONOMIZER OUTPUT
P116	PLUG-COMPRESSOR 2
P118	PLUG-COMP 3 & 4 CONTROL
P119	PLUG-COMP 3 & 4 INPUT
P132	PLUG-BLOWER EXHAUST FAN MTR
P133	PLUG-B11 EXHAUST FAN MOTOR
P134	PLUG-B12 EXHAUST FAN MOTOR
P138	PLUG-EXHAUST FAN 2
P139	PLUG-EXHAUST FAN 3

KEY	DESCRIPTION COMPONENT
P194	PLUG-INPUT, OUTPUT
P208	PLUG-MOTOR,EXHAUST BLOWER B35
P209	PLUG-MOTOR,EXHAUST BLOWER B36
P210	PLUG-MOTOR,EXHAUST BLOWER B37
P218	PLUG-CONTROL,INVERTER
S4	SWITCH-LIMIT,HI PRESS,COMP 1
S7	SWITCH-LIMIT,HI PRESS,COMP 2
S11	SWITCH-LOW PRESS,LOW AMB KIT
S28	SWITCH-LIMIT,HI PRESS,COMP 3
S37	SWITCH-PRESSURE, EXHAUST
S42	OVERLOAD-RELAY,BLOWER MOTOR
S48	SWITCH-DISCONNECT
S49	SWITCH-FREEZESTAT,COMP 1
S50	SWITCH-FREEZESTAT,COMP 2
S53	SWITCH-FREEZESTAT,COMP 3
S84	SWITCH-LOW PRESS,LOW AMB,COMP 2
S85	SWITCH-LOW PRESS,LOW AMB,COMP 3
S87	SWITCH-LOW PRESS,COMP 1
S88	SWITCH-LOW PRESS,COMP 2
S94	SWITCH-LOW PRESS,LOW AMB,COMP 4
S95	SWITCH-FREEZESTAT,COMP 4
S96	SWITCH,HIGH PRESS,COMP 4
S97	SWITCH-LOW PRESS,COMP 4
S98	SWITCH-LOW PRESS,COMP 3
S117	SWITCH-GFI
S134	OVERLOAD-EXHAUST BLOWER MOTOR
T1	TRANSFORMER-CONTROL
T18	TRANSFORMER-CONTACTOR
T29	TRANSFORMER-GFI
TB13	TERMINAL STRIP-POWER DISTRIB
TB18	TERMINAL STRIP-CYCLE CONTROL
TB24	TERMINAL STRIP-5 UNIT ADDER
TB34	TERMINAL STRIP-TRANS T1
TB35	TERMINAL STRIP-TRANS T18
TB40	TERMINAL STRIP-COMPRESSOR
TB58	TERMINAL STRIP-INVERTER BYPASS
TB59	TERMINAL STRIP-INVERTER BYPASS

KEY	DESCRIPTION COMPONENT
A34	SENSOR-PRESS,RETURN AIR
A55	PANEL-MAIN
A56	PANEL-ECONOMIZER
A57	PANEL-COMPRESSOR 2
A59	PANEL-COMPRESSOR 3 & 4
A133	CONTROL-GENERAL PURPOSE
B1	COMPRESSOR 1
B2	COMPRESSOR 2
B3	MOTOR-BLOWER
B4	MOTOR-OUTDOOR FAN 1
B5	MOTOR-OUTDOOR FAN 2
B10	MOTOR-EXHAUST FAN 1
B11	MOTOR-EXHAUST FAN 2
B12	MOTOR-EXHAUST FAN 3
B13	COMPRESSOR 3
B20	COMPRESSOR 4
B21	MOTOR-OUTDOOR FAN 3
B22	MOTOR-OUTDOOR FAN 4

KEY	DESCRIPTION COMPONENT
B23	MOTOR-OUTDOOR FAN 5
B24	MOTOR-OUTDOOR FAN 6
B35	MOTOR-EXHAUST BLOWER 1
B36	MOTOR-EXHAUST BLOWER 2
B37	MOTOR-EXHAUST BLOWER 3
C1	CAPACITOR-OUTDOOR FAN 1
C2	CAPACITOR-OUTDOOR FAN 2
C6	CAPACITOR-EXHAUST FAN 1
C8	CAPACITOR-EXHAUST FAN 2
C9	CAPACITOR-EXHAUST FAN 3
C18	CAPACITOR-OUTDOOR FAN 3
C19	CAPACITOR-OUTDOOR FAN 4
C20	CAPACITOR-OUTDOOR FAN 5
C21	CAPACITOR-OUTDOOR FAN 6
CB8	CIRCUIT BREAKER-TRANS T1
CB18	CIRCUIT BREAKER-TRANS T18
F6	FUSE-EXHAUST FAN
F10	FUSE-OUTDOOR FAN MOTOR

KEY	DESCRIPTION COMPONENT
F30	FUSE-TRANS,T29,PRIMARY
F31	FUSE-TRANS,T29,SECONDARY
F36	FUSE-INVERTER
HR1	HEATER-COMPRESSOR 1
HR2	HEATER-COMPRESSOR 2
HR5	HEATER-COMPRESSOR 3
HR11	HEATER-COMPRESSOR 4
J11	JACK-GFI RECEPTACLE
J69	JACK-BLOWER DECK
J35	JACK-TEST,HEAT
J36	JACK-TEST,COOL
J47	JACK-OUTDOOR FAN 1
J52	JACK-OUTDOOR FAN 2
J69	JACK-BLOWER DECK
J106	JACK-MOTOR,OUTDOOR FAN 3
J107	JACK-MOTOR,OUTDOOR FAN 4
J108	JACK-MOTOR,OUTDOOR FAN 5
J109	JACK-MOTOR,OUTDOOR FAN 6
J111	JACK-GAS 1 OUTPUT
J112	JACK-COOLING SENSOR INPUT

KEY	DESCRIPTION COMPONENT
J113	JACK-BLOWER & COOL 1 CONT
J114	JACK-SENSOR INPUT
J115	JACK-ECONOMIZER OUTPUT
J116	JACK-COMPRESSOR 2
J118	JACK-COMP 3 & 4 CONTROL
J119	JACK-COMP 3 & 4 INPUT
J132	JACK-BLOWER EXHAUST FAN MTR
J133	JACK-B11 EXHAUST FAN MOTOR
J134	JACK-B12 EXHAUST FAN MOTOR
J138	JACK-EXHAUST FAN 2

	WIRING DIAGRAM 10/04
COMBINATION PACKAGED/ROOFTOP	
LCA,LGA-248,300-1-G,J,M,Y LCC,LGC-300,360-1-G,J,M,Y	
HEAT/COOL SECTION B8	
Supersedes Form No.	New Form No. 534,699W

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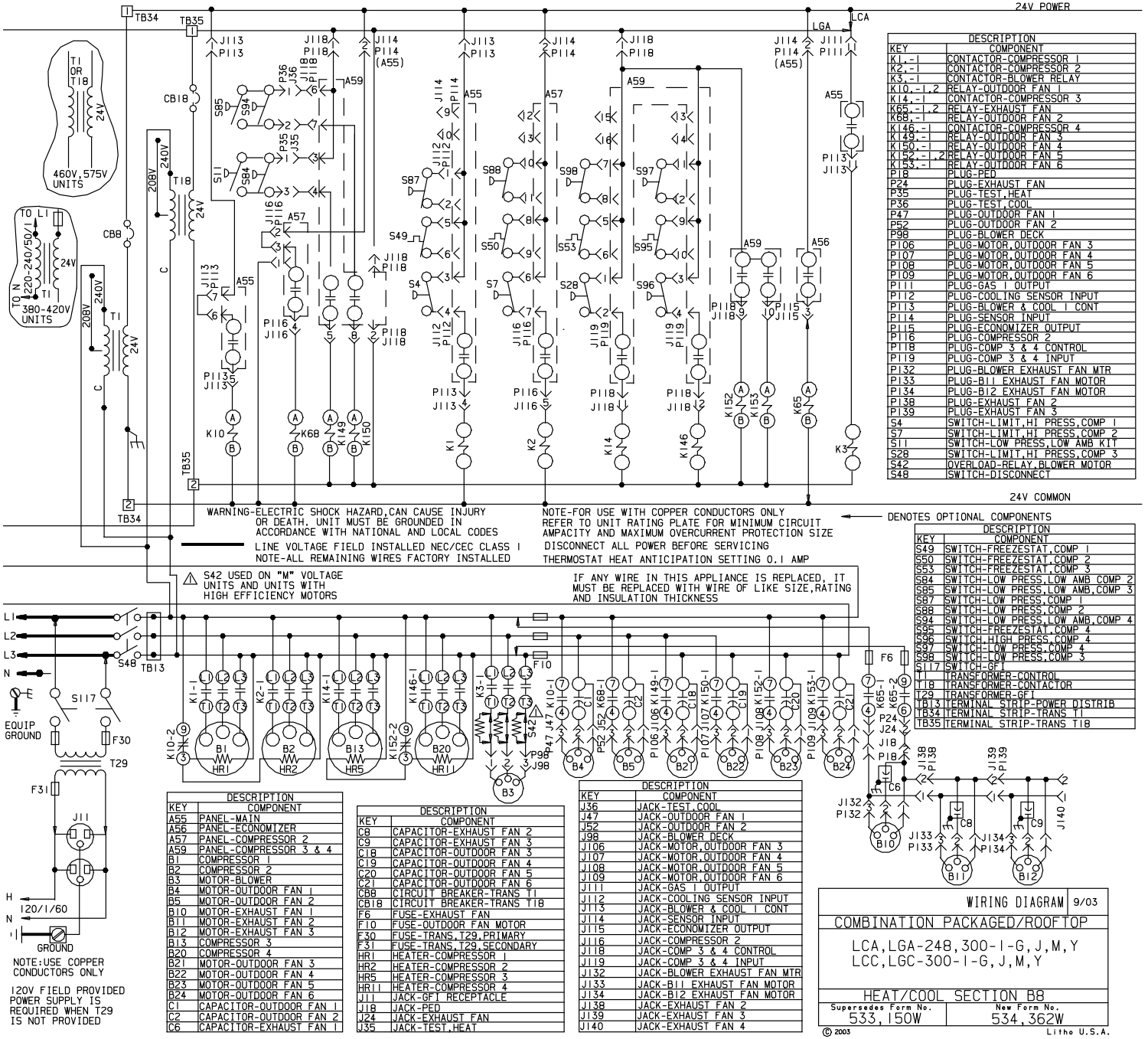


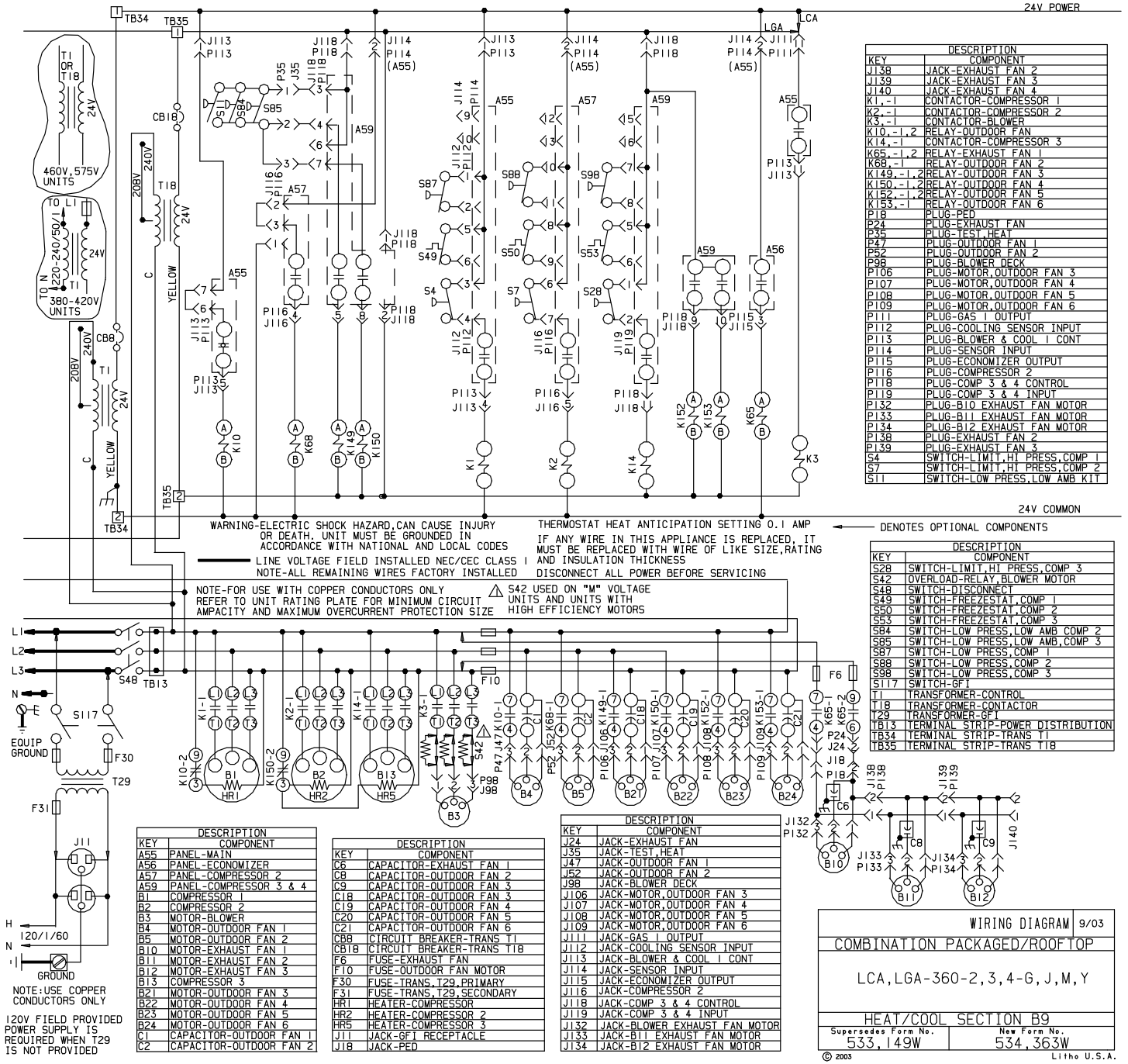
KEY	DESCRIPTION COMPONENT
K1,-1	CONTACTOR-COMPRESSOR 1
K2,-1	CONTACTOR-COMPRESSOR 2
K3,-1	CONTACTOR-BLOWER RELAY
K10,-1,2	RELAY-OUTDOOR FAN 1
K14,-1	CONTACTOR-COMPRESSOR 3
K65,-1,2	RELAY-EXHAUST FAN
K68,-1	RELAY-OUTDOOR FAN 2
K146,-1	CONTACTOR-COMPRESSOR 4
K149,-1	RELAY-OUTDOOR FAN 3
K150,-1	RELAY-OUTDOOR FAN 4
K152,-1,2	RELAY-OUTDOOR FAN 5
K153,-1	RELAY-OUTDOOR FAN 6
P18	PLUG-PED
P24	PLUG-EXHAUST FAN
P35	PLUG-TEST,HEAT
P36	PLUG-TEST,COOL
P47	PLUG-OUTDOOR FAN 1
P52	PLUG-OUTDOOR FAN 2
P98	PLUG-BLOWER DECK
P106	PLUG-MOTOR,OUTDOOR FAN 3
P107	PLUG-MOTOR,OUTDOOR FAN 4
P108	PLUG-MOTOR,OUTDOOR FAN 5
P109	PLUG-MOTOR,OUTDOOR FAN 6
P111	PLUG-GAS 1 OUTPUT
P112	PLUG-COOLING SENSOR INPUT
P113	PLUG-BLOWER & COOL 1 CONT
P114	PLUG-SENSOR INPUT
P115	PLUG-ECONOMIZER OUTPUT
P116	PLUG-COMPRESSOR 2
P118	PLUG-COMP 3 & 4 CONTROL
P119	PLUG-COMP 3 & 4 INPUT
P132	PLUG-BLOWER EXHAUST FAN MTR
P133	PLUG-B11 EXHAUST FAN MOTOR
P134	PLUG-B12 EXHAUST FAN MOTOR
P138	PLUG-EXHAUST FAN 2
P139	PLUG-EXHAUST FAN 3
S4	SWITCH-LIMIT,HI PRESS,COMP 1
S7	SWITCH-LIMIT,HI PRESS,COMP 2
S11	SWITCH-LOW PRESS,LOW AMB KIT
S28	SWITCH-LIMIT,HI PRESS,COMP 3
S42	OVERLOAD-RELAY,BLOWER MOTOR
S48	SWITCH-DISCONNECT

KEY	DESCRIPTION COMPONENT
S49	SWITCH-FREEZESTAT,COMP 1
S50	SWITCH-FREEZESTAT,COMP 2
S53	SWITCH-FREEZESTAT,COMP 3
S84	SWITCH-LOW PRESS,LOW AMB,COMP 2
S85	SWITCH-LOW PRESS,LOW AMB,COMP 3
S87	SWITCH-LOW PRESS,COMP 1
S88	SWITCH-LOW PRESS,COMP 2
S94	SWITCH-LOW PRESS,LOW AMB,COMP 4
S95	SWITCH-FREEZESTAT,COMP 4
S96	SWITCH,HIGH PRESS,COMP 4
S97	SWITCH-LOW PRESS,COMP 4
S98	SWITCH-LOW PRESS,COMP 3
S117	SWITCH-GFI
T1	TRANSFORMER-CONTROL
T18	TRANSFORMER-CONTACTOR
T29	TRANSFORMER-GFI
TB13	TERMINAL STRIP-POWER DISTRIB
TB34	TERMINAL STRIP-TRANS T1
TB35	TERMINAL STRIP-TRANS T18

KEY	DESCRIPTION COMPONENT
A55	PANEL-MAIN
A56	PANEL-ECONOMIZER
A57	PANEL-COMPRESSOR 2
A59	PANEL-COMPRESSOR 3 & 4
B1	COMPRESSOR 1
B2	COMPRESSOR 2
B3	MOTOR-BLOWER
B4	MOTOR-OUTDOOR FAN 1
B5	MOTOR-OUTDOOR FAN 2
B10	MOTOR-EXHAUST FAN 1
B11	MOTOR-EXHAUST FAN 2
B12	MOTOR-EXHAUST FAN 3
B13	COMPRESSOR 3
B20	COMPRESSOR 4
B21	MOTOR-OUTDOOR FAN 3
B22	MOTOR-OUTDOOR FAN 4
B23	MOTOR-OUTDOOR FAN 5
B24	MOTOR-OUTDOOR FAN 6
C1	CAPACITOR-OUTDOOR FAN 1
C2	CAPACITOR-OUTDOOR FAN 2
C6	CAPACITOR-EXHAUST FAN 1

KEY	DESCRIPTION COMPONENT
C8	CAPACITOR-EXHAUST FAN 2
C9	CAPACITOR-EXHAUST FAN 3
C18	CAPACITOR-OUTDOOR FAN 3
C19	CAPACITOR-OUTDOOR FAN 4
C20	CAPACITOR-OUTDOOR FAN 5
C21	CAPACITOR-OUTDOOR FAN 6
CB8	CIRCUIT BREAKER-TRANS T1
CB18	CIRCUIT BREAKER-TRANS T18
F6	FUSE-EXHAUST FAN
F10	FUSE-OUTDOOR FAN MOTOR
F30	FUSE-TRANS,T29,PRIMARY
F31	FUSE-TRANS,T29,SECONDARY
HR1	HEATER-COMPRESSOR 1
HR2	HEATER-COMPRESSOR 2
HR5	HEATER-COMPRESSOR 3
HR11	HEATER-COMPRESSOR 4
J11	JACK-GFI RECEPTACLE
J18	JACK-PED
J24	JACK-EXHAUST FAN
J35	JACK-TEST,HEAT

KEY	DESCRIPTION COMPONENT
J36	JACK-TEST,COOL
J47	JACK-OUTDOOR FAN 1
J52	JACK-OUTDOOR FAN 2
J98	JACK-BLOWER DECK
J106	JACK-MOTOR,OUTDOOR FAN 3
J107	JACK-MOTOR,OUTDOOR FAN 4
J108	JACK-MOTOR,OUTDOOR FAN 5
J109	JACK-MOTOR,OUTDOOR FAN 6
J111	JACK-GAS 1 OUTPUT
J112	JACK-COOLING SENSOR INPUT
J113	JACK-BLOWER & COOL 1 CONT
J114	JACK-SENSOR INPUT
J115	JACK-ECONOMIZER OUTPUT
J116	JACK-COMPRESSOR 2
J118	JACK-COMP 3 & 4 CONTROL
J119	JACK-COMP 3 & 4 INPUT
J132	JACK-BLOWER EXHAUST FAN MTR
J133	JACK-B11 EXHAUST FAN MOTOR
J134	JACK-B12 EXHAUST FAN MOTOR
J138	JACK-EXHAUST FAN 2
J139	JACK-EXHAUST FAN 3
J140	JACK-EXHAUST FAN 4



DESCRIPTION	
KEY	COMPONENT
J138	JACK-EXHAUST FAN 2
J139	JACK-EXHAUST FAN 3
J140	JACK-EXHAUST FAN 4
K1,-1	CONTACTOR-COMPRESSOR 1
K2,-1	CONTACTOR-COMPRESSOR 2
K3,-1	CONTACTOR-BLOWER
K10,-1,2	RELAY-OUTDOOR FAN
K14,-1	CONTACTOR-COMPRESSOR 3
K65,-1,2	RELAY-EXHAUST FAN 1
K68,-1	RELAY-OUTDOOR FAN 2
K149,-1,2	RELAY-OUTDOOR FAN 3
K150,-1,2	RELAY-OUTDOOR FAN 4
K152,-1,2	RELAY-OUTDOOR FAN 5
K153,-1	RELAY-OUTDOOR FAN 6
P18	PLUG-PED
P24	PLUG-EXHAUST FAN
P35	PLUG-TEST,HEAT
P47	PLUG-OUTDOOR FAN 1
P52	PLUG-OUTDOOR FAN 2
P98	PLUG-BLOWER DECK
P106	PLUG-MOTOR,OUTDOOR FAN 3
P107	PLUG-MOTOR,OUTDOOR FAN 4
P108	PLUG-MOTOR,OUTDOOR FAN 5
P109	PLUG-MOTOR,OUTDOOR FAN 6
P111	PLUG-GAS 1 OUTPUT
P112	PLUG-COOLING SENSOR INPUT
P113	PLUG-BLOWER & COOL 1 CONT
P114	PLUG-SENSOR INPUT
P115	PLUG-ECONOMIZER OUTPUT
P116	PLUG-COMPRESSOR 2
P118	PLUG-COMP 3 & 4 CONTROL
P119	PLUG-COMP 3 & 4 INPUT
P132	PLUG-B10 EXHAUST FAN MOTOR
P133	PLUG-B11 EXHAUST FAN MOTOR
P134	PLUG-B12 EXHAUST FAN MOTOR
P138	PLUG-EXHAUST FAN 2
P139	PLUG-EXHAUST FAN 3
S4	SWITCH-LIMIT,HI PRESS,COMP 1
S7	SWITCH-LIMIT,HI PRESS,COMP 2
S11	SWITCH-LOW PRESS,LOW AMB KIT

DESCRIPTION	
KEY	COMPONENT
S28	SWITCH-LIMIT,HI PRESS,COMP 3
S42	OVERLOAD-RELAY,BLOWER MOTOR
S48	SWITCH-DISCONNECT
S49	SWITCH-FREEZESTAT,COMP 1
S50	SWITCH-FREEZESTAT,COMP 2
S53	SWITCH-FREEZESTAT,COMP 3
S84	SWITCH-LOW PRESS,LOW AMB COMP 2
S85	SWITCH-LOW PRESS,LOW AMB,COMP 3
S87	SWITCH-LOW PRESS,COMP 1
S88	SWITCH-LOW PRESS,COMP 2
S98	SWITCH-LOW PRESS,COMP 3
S117	SWITCH-GFI
T1	TRANSFORMER-CONTROL
T18	TRANSFORMER-CONTACTOR
T29	TRANSFORMER-GFI
TB13	TERMINAL STRIP-POWER DISTRIBUTION
TB34	TERMINAL STRIP-TRANS T1
TB35	TERMINAL STRIP-TRANS T18

DESCRIPTION	
KEY	COMPONENT
A55	PANEL-MAIN
A56	PANEL-ECONOMIZER
A57	PANEL-COMPRESSOR 2
A59	PANEL-COMPRESSOR 3 & 4
B1	COMPRESSOR 1
B2	COMPRESSOR 2
B3	MOTOR-BLOWER
B4	MOTOR-OUTDOOR FAN 1
B5	MOTOR-OUTDOOR FAN 2
B10	MOTOR-EXHAUST FAN 1
B11	MOTOR-EXHAUST FAN 2
B12	MOTOR-EXHAUST FAN 3
B13	COMPRESSOR 3
B21	MOTOR-OUTDOOR FAN 3
B22	MOTOR-OUTDOOR FAN 4
B23	MOTOR-OUTDOOR FAN 5
B24	MOTOR-OUTDOOR FAN 6
C1	CAPACITOR-OUTDOOR FAN 1
C2	CAPACITOR-OUTDOOR FAN 2

DESCRIPTION	
KEY	COMPONENT
C6	CAPACITOR-EXHAUST FAN 1
C8	CAPACITOR-OUTDOOR FAN 2
C9	CAPACITOR-OUTDOOR FAN 3
C18	CAPACITOR-OUTDOOR FAN 3
C19	CAPACITOR-OUTDOOR FAN 4
C20	CAPACITOR-OUTDOOR FAN 5
C21	CAPACITOR-OUTDOOR FAN 6
CB8	CIRCUIT BREAKER-TRANS T1
CB18	CIRCUIT BREAKER-TRANS T18
F6	FUSE-EXHAUST FAN
F10	FUSE-OUTDOOR FAN MOTOR
F30	FUSE-TRANS.T29,PRIMARY
F31	FUSE-TRANS,T29,SECONDARY
HR1	HEATER-COMPRESSOR
HR2	HEATER-COMPRESSOR 2
HR5	HEATER-COMPRESSOR 3
J11	JACK-GFI RECEPTACLE
J18	JACK-PED

DESCRIPTION	
KEY	COMPONENT
J24	JACK-EXHAUST FAN
J35	JACK-TEST,HEAT
J47	JACK-OUTDOOR FAN 1
J52	JACK-OUTDOOR FAN 2
J98	JACK-BLOWER DECK
J106	JACK-MOTOR,OUTDOOR FAN 3
J107	JACK-MOTOR,OUTDOOR FAN 4
J108	JACK-MOTOR,OUTDOOR FAN 5
J109	JACK-MOTOR,OUTDOOR FAN 6
J111	JACK-GAS 1 OUTPUT
J112	JACK-COOLING SENSOR INPUT
J113	JACK-BLOWER & COOL 1 CONT
J114	JACK-SENSOR INPUT
J115	JACK-ECONOMIZER OUTPUT
J116	JACK-COMPRESSOR 2
J118	JACK-COMP 3 & 4 CONTROL
J119	JACK-COMP 3 & 4 INPUT
J132	JACK-BLOWER EXHAUST FAN MOTOR
J133	JACK-B11 EXHAUST FAN MOTOR
J134	JACK-B12 EXHAUST FAN MOTOR

WIRING DIAGRAM 9/03

COMBINATION PACKAGED/ROOFTOP

LCA,LGA-360-2,3,4-G,J,M,Y

HEAT/COOL SECTION B9

Supersedes Form No.	New Form No.
533,149W	534,363W

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SEQUENCE OF OPERATION
LGA, LGC, LCA, LCC248/300/360 G J M Y

NOTE - Steps 12, 17 and 27, beggining with "3 compressor 360H" pertain only to LGA/LCA360H units equipped with 3 compressors..

Power:

1- Line voltage from TB2, unit disconnect S48, or other factory or field installed optional power disconnects, such as CB10, energizes transformer T1 and T18. Transformer T1 provides 24VAC power to terminal strip TB34 and T18 provides 24VAC power to terminal strip TB35. The two terminal strips provide 24VAC power to the unit cooling, heating and blower controls and thermostat.

2- Terminal strip TB13 is also energized when the unit disconnect closes. TB13 supplies line voltage to compressor crankcase heaters, compressors, blower motors, and fan motors.

Blower Operation (OCP input must be on):

3- The main control module A55 receives a demand from thermostat terminal G. A55 energizes blower contactor K3 with 24VAC.

4- N.O. K3-1 closes, energizing blower B3.

Economizer Operation:

5- The economizer control module A56 receives a demand and energizes exhaust fan relay K65 with 24VAC at 50% (travel) outside air damper open (adjustable).

6- N.O. K65-1 and K65-2 both close, energizing exhaust fan motors B10, B11 and B12.

1st Stage Cooling

7- First stage cooling demand energizes Y1 and G in the thermostat. G energizes blower, if blower is not already running (see step 3).

8- 24VAC is routed through TB34 to the main control module A55. After A55 proves N.C. low pressure switch S87, N.C. freezestat S49, and N.C. high pressure switch S4, compressor contactor K1 is energized.

9- N.O. contacts K1-1 close energizing compressor B1.

10-Control module A55 energizes condenser fan contactor K10.

11- N.O. contacts K10-1 close energizing condenser fan B4 and N.C. contacts K10-2 open de-energizing compressor crankcase heaters HR1 and HR2.

12- **3 compressor 360H -** N.O. contacts K10-1 close energizing condenser fan B4 and N.C. contacts K10-2 open de-energizing compressor crankcase heaters HR1.

13- Simultaneous with step 8, 24VAC is routed through the compressor 2 control module A57. After A57 proves N.C. low pressure switch S88, N.C. freezestat S50, and N.C. high pressure switch S7, compressor contactor K2 is energized.

14- N.O. contacts K2-1 close energizing compressor B2.

15- Compressor 2 control module A57 energizes condenser fan 2 relay K68. Compressor 3 control module A59 energizes condenser fan relay K149 through N.O. low ambient pressure switches S11 or S84.

16- N.O. contacts K68-1 and K149-1 close energizing condenser fans B5 and B21.

17- **3 compressor 360H**-Compressor 2 control module A57 energizes condenser fan 2 relay K68. Compressor 3 control module A59 energizes condenser fan relay K149 and K150 through N.O. low ambient pressure switches S11 or S84. A59 also energizes condenser fan relays K152 and K153.

18- N.O. contacts K68-1, K149-1, K150-1, 152-1 and K153-1 close energizing condenser fans B5, B21, B22, B23 and B24. N.C. contacts K150-2 open de-energizing compressor crankase heater HR2 and HR5.

2nd Stage Cooling

19- Second stage cooling demand energizes Y2.

20-24VAC is routed through TB35 to compressor 3 and 4 module A59. After A59 proves N.C. low pressure switches S98 and S97, N.C. freezestats S53 and S95, and N.C. high pressure switches S28 and S96, compressor contactors K14 and K146 are energized.

21- N.O. contacts K14-1 close energizing compressor B13.

22- N.O. contacts K146-1 close energizing compressor B20.

23-N.O. low ambient pressure switches S85 and S94 close to energize condenser fan relay K150.

24-N.O. contacts K150-1 close energizing condenser fan B22.

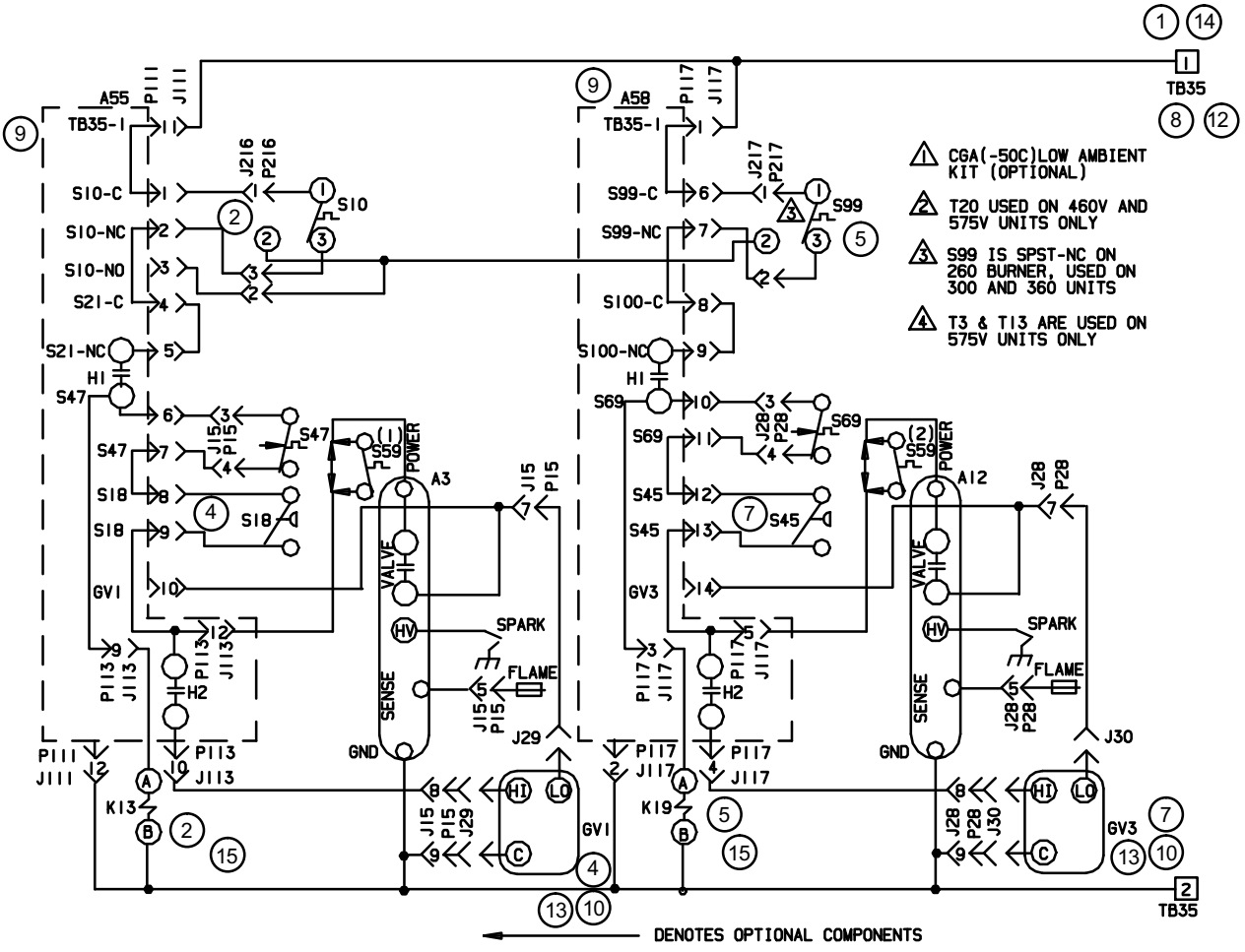
25- Compressor 3 and 4 module A59 energizes condenser fan relay K152 and K153.

26-N.O. contacts K152-1 and K153-1 close energizing condenser fan B23 and B24. N.C. contacts K152-2 open de-energizing compressor 3 crankcase heater HR5 and compressor 4 crankcase heater HR11.

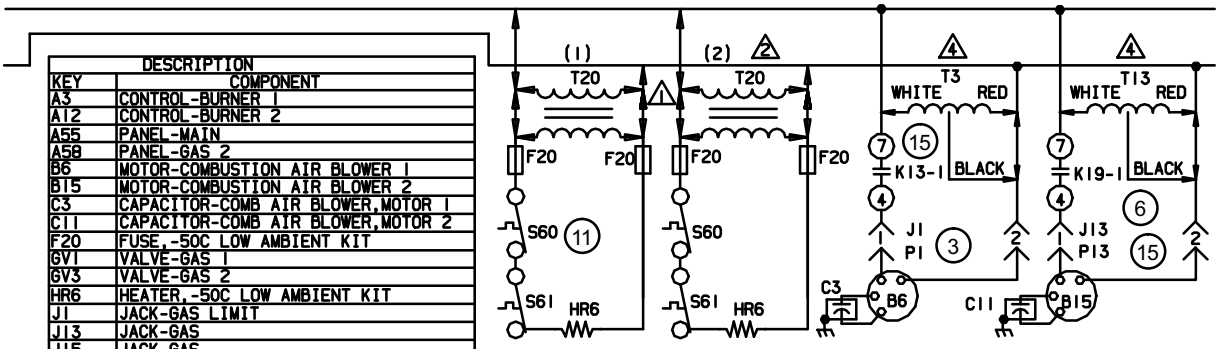
27-**3 compressor 360H-**24VAC is routed through TB35 to compressor 3 module A59. After A59 proves N.C. low pressure switch S98, N.C. freezestat S53 and high pressure switch S28, compressor contactor K14 is energized.

28- N.O. K14-1 contacts close energizing compressor B13.

GAS HEAT FOR LGA/LGC248/300/360



1. CGA(-50C)LOW AMBIENT KIT (OPTIONAL)
2. T20 USED ON 460V AND 575V UNITS ONLY
3. S99 IS SPST-NC ON 260 BURNER, USED ON 300 AND 360 UNITS
4. T3 & T13 ARE USED ON 575V UNITS ONLY



KEY	DESCRIPTION COMPONENT
A3	CONTROL-BURNER 1
A12	CONTROL-BURNER 2
A55	PANEL-MAIN
A58	PANEL-GAS 2
B6	MOTOR-COMBUSTION AIR BLOWER 1
B15	MOTOR-COMBUSTION AIR BLOWER 2
C3	CAPACITOR-COMB AIR BLOWER,MOTOR 1
C11	CAPACITOR-COMB AIR BLOWER,MOTOR 2
F20	FUSE,-50C LOW AMBIENT KIT
GV1	VALVE-GAS 1
GV3	VALVE-GAS 2
HR6	HEATER,-50C LOW AMBIENT KIT
J1	JACK-GAS LIMIT
J13	JACK-GAS
J15	JACK-GAS
J28	JACK-ECONOMIZER PROGRAM
J29	JACK-GAS 1
J30	JACK-GAS 2
J111	JACK-GAS 1,OUTPUT
J113	JACK-BLOWER & COOL 1 CONTROL
J117	JACK-GAS 2 CONTROL
J216	JACK-PRIMARY LIMIT 1
J217	JACK-PRIMARY LIMIT 2
K13,-1	RELAY-COMBUSTION AIR BLOWER
K19,-1	RELAY-STAGE 2, HEAT
P1	PLUG-GAS LIMIT
P13	PLUG-GAS
P15	PLUG-GAS
P28	PLUG-ECONOMIZER PROGRAM
P111	PLUG-GAS 1,OUTPUT
P113	PLUG-BLOWER & COOL 1 CONTROL
P117	PLUG-GAS 2 CONTROL
P216	PLUG-PRIMARY LIMIT 1
P217	PLUG-PRIMARY LIMIT 2
S10	SWITCH-LIMIT, PRIMARY GAS
S18	SWITCH-COMB AIR BLOWER, PROVE
S45	SWITCH-LIMIT,COMB AIR BWR,PROVE 2
S47	SWITCH-FLAME ROLLOUT, BURNER 1

KEY	DESCRIPTION COMPONENT
S59	THERMOSTAT,-35 C OPEN,-50 C
S60	THERMOSTAT,-23C CL,-7C OP,-50C LOW AMB KIT
S61	THERMOSTAT,+24C OPEN,-50C LOW AMB KIT
S69	SWITCH-FLAME ROLLOUT 2
S99	SWITCH-LIMIT,PRIMARY BURNER 2
T3	TRANSFORMER-COMB AIR BLOWER 1
T13	TRANSFORMER-COMB AIR BLOWER 2
T20	TRANSFORMER,-50C LOW AMBIENT KIT
TB35	TERMINAL STRIP-TRANS T1

WIRING DIAGRAM	4/04
COMBINATION UNIT-ROOFTOP	
GAS HEAT FOR "L" SERIES,260,360 AND 480 UNITS (C & D BOX)	
HEATING SECTION-A2	
Supersedes Form No. 534,443W	New Form No. 534,658W

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SEQUENCE OF OPERATION

FIRST STAGE HEAT:

1 - Heating demand initiates at W1 in thermostat.

2 - 24VAC is routed through TB35 to the main control module A55. After A55 proves N.C. primary limit S10 and N.C. secondary limit S21 the combustion air blower relay K13 is energized.

3 - N.O. K13-1 contacts close allowing line voltage (or transformer T3 in 460V and 575V only) to energize combustion air blower B6.

4 - After the combustion air inducer B6 has reached full speed, the combustion air proving switch (S18) contacts close. The A55 routes 24VAC through N.C. burner 1 flame rollout switch S47 and the closed contacts of the combustion air proving switch (S18) to energize the ignition module A3. After a 30 second delay A3 energizes gas valve GV1 on low fire.

5 - As steps 2, 3 and 4 occur, 24VAC is also routed to the gas valve control module A58. After A58 proves N.C. primary gas heat limit S99 and N.C. secondary limit S100 the combustion air inducer relay K19 is energized.

6 - N.O. K19-1 contacts close allowing line voltage (or transformer T13 in 460V and 575V only) to energize combustion air inducer B15.

7 - After the combustion air inducer B15 has reached full speed, the combustion air proving switch (S45) contacts close. The A58 routes 24VAC through N.C. burner 2 flame rollout switch S69 and the closed contacts of the combustion air proving switch (S45) to energize the ignition module A12. After a 30 second delay A12 energizes gas valve GV3 on low fire. Indoor blower energizes after time delay Time delay is field adjustable with a factory set default of 40 seconds.

SECOND STAGE HEAT:

8 - With first stage heat operating, an additional heating demand initiates W2 in the thermostat.

9 - A second stage heating demand is received by both A55 and A58 modules.

10 - Each module will energize the corresponding gas valves GV1 and GV3 on high fire.

OPTIONAL LOW AMBIENT KIT (C.G.A. -50°C LOW AMBIENT KIT):

11 - Line voltage (or transformer T20 in 460V and 575V only) is routed through the low ambient kit fuses F20 and N.C. low ambient kit thermostats S60 and S61 to energize low ambient kit heater HR6.

END OF SECOND STAGE HEAT:

12 - Heating demand is satisfied. Terminal W2 is de-energized.

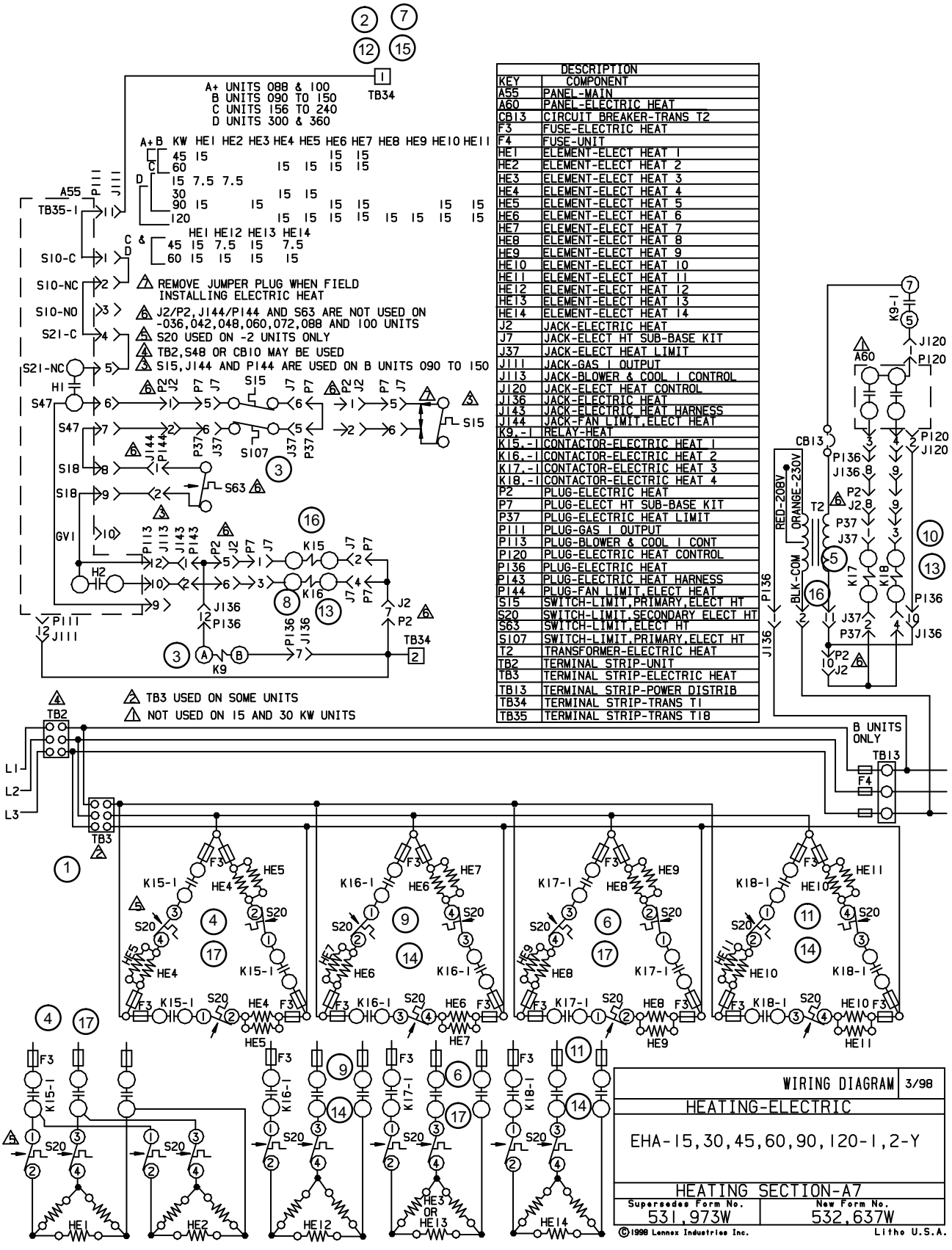
13 - High fire is de-energized on gas valves GV1 and GV3 by the A55 and A58 Module.

END OF FIRST STAGE HEAT:

14 - Heating demand is satisfied. Terminal W1 is de-energized.

15 - Ignition module A3 is de-energized by A55 in turn de-energizing low fire on GV1. Combustion inducer relay K13 is also de-energized. At the same instant, ignition module A12 is de-energized by A58 module in turn de-energizing low fire on GV3. K19 combustion air b inducerrelay is also de-energized.

A7 diagram EHA-30, 45, 60, 90, 120 - Y



KEY	DESCRIPTION COMPONENT
A55	PANEL-MAIN
A60	PANEL-ELECTRIC HEAT
CB13	CIRCUIT BREAKER-TRANS T2
F3	FUSE-ELECTRIC HEAT
F4	FUSE-UNIT
HE1	ELEMENT-ELECT HEAT 1
HE2	ELEMENT-ELECT HEAT 2
HE3	ELEMENT-ELECT HEAT 3
HE4	ELEMENT-ELECT HEAT 4
HE5	ELEMENT-ELECT HEAT 5
HE6	ELEMENT-ELECT HEAT 6
HE7	ELEMENT-ELECT HEAT 7
HE8	ELEMENT-ELECT HEAT 8
HE9	ELEMENT-ELECT HEAT 9
HE10	ELEMENT-ELECT HEAT 10
HE11	ELEMENT-ELECT HEAT 11
HE12	ELEMENT-ELECT HEAT 12
HE13	ELEMENT-ELECT HEAT 13
HE14	ELEMENT-ELECT HEAT 14
J2	JACK-ELECTRIC HEAT
J7	JACK-ELECT HT SUB-BASE KIT
J37	JACK-ELECT HEAT LIMIT
J111	JACK-GAS 1 OUTPUT
J113	JACK-BLOWER & COOL 1 CONTROL
J120	JACK-ELECT HEAT CONTROL
J136	JACK-ELECTRIC HEAT
J143	JACK-ELECTRIC HEAT HARNESS
J144	JACK-FAN LIMIT,ELECT HEAT
K9,-1	RELAY-HEAT
K15,-1	CONTACTOR-ELECTRIC HEAT 1
K16,-1	CONTACTOR-ELECTRIC HEAT 2
K17,-1	CONTACTOR-ELECTRIC HEAT 3
K18,-1	CONTACTOR-ELECTRIC HEAT 4
P2	PLUG-ELECTRIC HEAT
P7	PLUG-ELECT HT SUB-BASE KIT
P37	PLUG-ELECTRIC HEAT LIMIT
P111	PLUG-GAS 1 OUTPUT
P113	PLUG-BLOWER & COOL 1 CONT
P120	PLUG-ELECTRIC HEAT CONTROL
P136	PLUG-ELECTRIC HEAT
P143	PLUG-ELECTRIC HEAT HARNESS
P144	PLUG-FAN LIMIT,ELECT HEAT
S15	SWITCH-LIMIT,PRIMARY,ELECT HT
S20	SWITCH-LIMIT,SECONDARY ELECT HT
S63	SWITCH-LIMIT,ELECT HT
S107	SWITCH-LIMIT,PRIMARY,ELECT HT
T2	TRANSFORMER-ELECTRIC HEAT
TB2	TERMINAL STRIP-UNIT
TB3	TERMINAL STRIP-ELECTRIC HEAT
TB13	TERMINAL STRIP-POWER DISTRIB
TB34	TERMINAL STRIP-TRANS T1
TB35	TERMINAL STRIP-TRANS T18

WIRING DIAGRAM	3/98
HEATING-ELECTRIC	
EHA-15,30,45,60,90,120-1,2-Y	
HEATING SECTION-A7	
Supersedes Form No. 531,973W	New Form No. 532,637W

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SEQUENCE OF OPERATION
A7 DIAGRAM - EHA-30, 45, 60, 90, 120 - Y
A6 DIAGRAM - EHA-30, 45, 60, 90, 120 - G, J

Diagrams A7 and A6 are the EHA electric heat sections used in the LHA and LCA units. The Y voltage diagram (A7) use elements configured in a Wye. The G and J voltage diagram (A6) use elements configured in a Delta. Both diagrams A7 and A6 follow the following sequence of operation:

NOTE:Two electric heat sections are used in all 30kW through 120kW heaters. The heat sections are labelled first electric heat section (left side) and second electric heat section (right side). See figure 28.

NOTE: In the case of EHA 30kW, the second heat section (right side) is a slave (only has electric heat elements and a limit). In this case the A60 module, T2 transformer, and K9 heat relay are not used. Line voltage is supplied to elements in both heat section one (left side) and two (right side) by the contactors in heat section one (left side) and all control is through the A55 module.

HEATING ELEMENTS:

1 - Terminal strip TB3 is energized when the unit disconnect closes. TB3 supplies line voltage to electric heat elements HE1 through HE14. Each heating element is protected by fuse F3.

FIRST STAGE HEAT:

2 - Heating demand initiates at W1 in thermostat.

3 - 24VAC is routed through TB34 to the main control module A55. After A55 proves N.C. primary limits S15 (heat section one, left side), S107 (heat section two, right side), and redundant electric heat limit S63, the electric heat contactor K15 and heat relay K9 are energized. Indoor blower is energized with no time delay.

4 - N.O. contact K15-1 closes allowing the first bank of elements in heat section one (left side) to be energized.

5 - At the same time, line voltage is routed through transformer T2, which provides 24VAC to the electric heat control module A60. A60 is energized when N.O. contacts K9-1 close. A N.O. contact in A60 closes,
energizing electric heat relay K17.

6 - N.O. contacts K17-1 close allowing the first set of elements in heat section two (right side) to be energized.

SECOND STAGE HEAT:

7 - With the first stage heat operating, an additional heating demand initiates at W2 in the thermostat.

8 - 24VAC is routed through the main control module A55, which in turn energizes the electric heat contactor K16.

9 - N.O. contacts K16-1 close allowing the second set of elements in heat section one (left side) to be energized.

10 - Simultaneous with step eight, a N.O. contact in the electric heat control module A60 closes, allowing 24VAC to energize electric heat contactor K18.

11 - N.O. contacts K18-1 close allowing the second set of elements in heat section two
(right side) to be energized.

END OF SECOND STAGE HEAT:

12 - Heating demand is satisfied. Terminal W2 in the thermostat is de-energized.

13 - Electric heat contactors K16 and K18 are de-energized.

14 - The second set of electric heat elements in heat sections one (left side) and two (right side) are de-energized.

END OF FIRST STAGE HEAT:

15 - Heating demand is satisfied. Terminal W1 in the thermostat is de-energized.

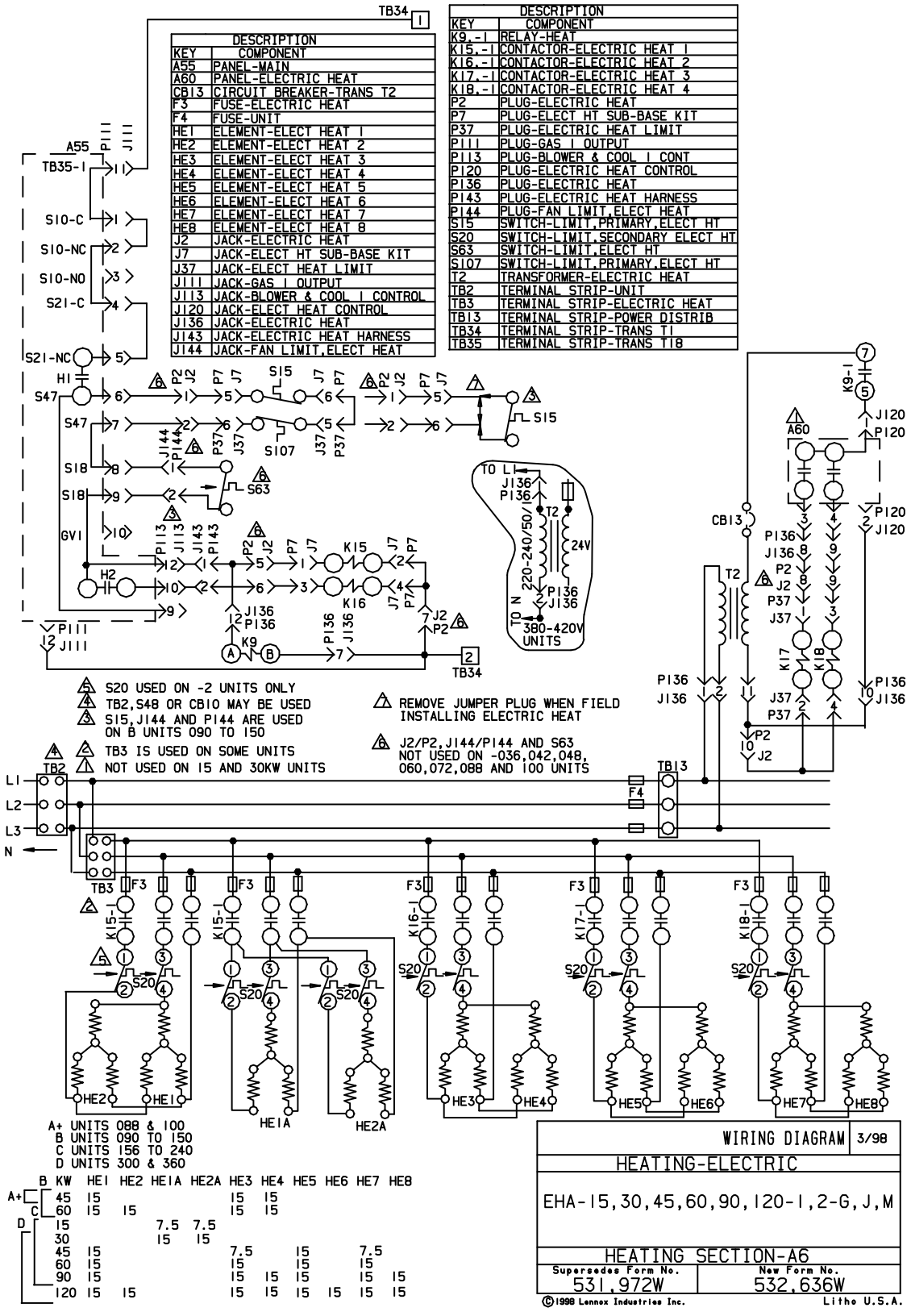
16 - Electric heat contactors K15 and K17 are de-energized.

17 - The first set of electric heat elements in heat sections one (left side) and two (right side) are de-energized.

A6 diagram EHA-30, 45, 60, 90, 120 - G, J

KEY	DESCRIPTION COMPONENT
A55	PANEL-MAIN
A60	PANEL-ELECTRIC HEAT
CB13	CIRCUIT BREAKER-TRANS T2
F3	FUSE-ELECTRIC HEAT
F4	FUSE-UNIT
HE1	ELEMENT-ELECT HEAT 1
HE2	ELEMENT-ELECT HEAT 2
HE3	ELEMENT-ELECT HEAT 3
HE4	ELEMENT-ELECT HEAT 4
HE5	ELEMENT-ELECT HEAT 5
HE6	ELEMENT-ELECT HEAT 6
HE7	ELEMENT-ELECT HEAT 7
HE8	ELEMENT-ELECT HEAT 8
J2	JACK-ELECTRIC HEAT
J7	JACK-ELECT HT SUB-BASE KIT
J37	JACK-ELECT HEAT LIMIT
J111	JACK-GAS 1 OUTPUT
J113	JACK-BLOWER & COOL 1 CONTROL
J120	JACK-ELECT HEAT CONTROL
J136	JACK-ELECTRIC HEAT
J143	JACK-ELECTRIC HEAT HARNESS
J144	JACK-FAN LIMIT,ELECT HEAT

KEY	DESCRIPTION COMPONENT
K9,-1	RELAY-HEAT
K15,-1	CONTACTOR-ELECTRIC HEAT 1
K16,-1	CONTACTOR-ELECTRIC HEAT 2
K17,-1	CONTACTOR-ELECTRIC HEAT 3
K18,-1	CONTACTOR-ELECTRIC HEAT 4
P2	PLUG-ELECTRIC HEAT
P7	PLUG-ELECT HT SUB-BASE KIT
P37	PLUG-ELECTRIC HEAT LIMIT
P111	PLUG-GAS 1 OUTPUT
P113	PLUG-BLOWER & COOL 1 CONT
P120	PLUG-ELECTRIC HEAT CONTROL
P136	PLUG-ELECTRIC HEAT
P143	PLUG-ELECTRIC HEAT HARNESS
P144	PLUG-FAN LIMIT,ELECT HEAT
S15	SWITCH-LIMIT,PRIMARY,ELECT HT
S20	SWITCH-LIMIT,SECONDARY ELECT HT
S63	SWITCH-LIMIT,ELECT HT
S107	SWITCH-LIMIT,PRIMARY,ELECT HT
T2	TRANSFORMER-ELECTRIC HEAT
TB2	TERMINAL STRIP-UNIT
TB3	TERMINAL STRIP-ELECTRIC HEAT
TB13	TERMINAL STRIP-POWER DISTRIB
TB34	TERMINAL STRIP-TRANS T1
TB35	TERMINAL STRIP-TRANS T18



A+ UNITS 088 & 100
B UNITS 090 TO 150
C UNITS 156 TO 240
D UNITS 300 & 360

	B KW	HE1	HE2	HE1A	HE2A	HE3	HE4	HE5	HE6	HE7	HE8
A+	45	15				15	15				
C	60	15	15			15	15				
D	15			7.5	7.5						
	30			15	15						
	45	15				7.5		15		7.5	
	60	15				15		15		15	
	90	15				15	15	15		15	15
	120	15	15			15	15	15	15	15	15

WIRING DIAGRAM 3/98

HEATING-ELECTRIC

EHA-15,30,45,60,90,120-1,2-G,J,M

HEATING SECTION-A6

Supersedes Form No.	New Form No.
531,972W	532,636W

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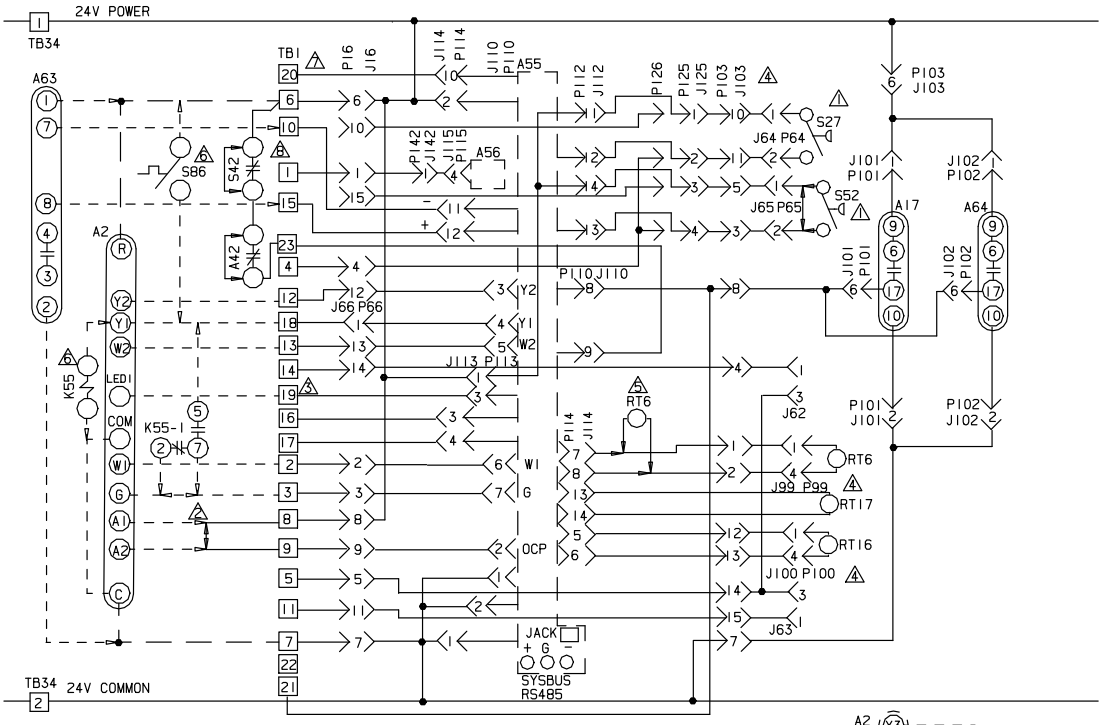
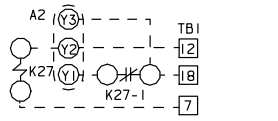
ELECTRONIC OR ELECTROMECHANICAL THERMOSTAT



DESCRIPTION	
KEY	COMPONENT
A2	SENSOR-ELECTRONIC
A17	DETECTOR-SMOKE
A42	MONITOR-PHASE PROTECTION
A55	PANEL-MAIN
A56	PANEL-ECONOMIZER
A63	SENSOR-CO2(IAQ)
A64	DETECTOR-SMOKE,SUPPLY AIR
J16	JACK-UNIT
J62	JACK-A2 RETURN AIR SENSOR
J63	JACK-RTI DISCH. AIR SENSOR
J64	JACK-S27 FILTER SWITCH
J65	JACK-S52 FAN SWITCH
J66	JACK-COOL 1 INTERFACE
J99	JACK-DISCHARGE TEMP SENSOR
J100	JACK-RETURN TEMP SENSOR
J101	JACK-SMOKE DETECTOR,RETURN AIR
J102	JACK-SMOKE DETECTOR,SUPPLY AIR
J103	JACK-SENSORS,CONTROL
J110	JACK-THERMOSTAT INPUT
J112	JACK-COOLING SENSOR INPUT
J113	JACK-BLOWER & COOL 1 CONTROL
J114	JACK-SENSOR INPUT
J115	JACK-ECONOMIZER OUTPUT
J125	JACK-BLOWER PROVING
J126	JACK-JUMPER,BLOWER PROVING
J142	JACK-ECONOMIZER HARNESS
K27,-1	RELAY-TRANSFER 2
K55,-1	RELAY-BLOWER
P16	PLUG-UNIT
P64	PLUG-S27 FILTER SWITCH
P65	PLUG-S50 FAN SWITCH
P66	PLUG-COOL ONE
P99	PLUG-DISCHARGE TEMP SENSOR
P100	PLUG-RETURN TEMP SENSOR
P101	PLUG-SMOKE DETECTOR,RETURN AIR
P102	PLUG-SMOKE DETECTOR,SUPPLY AIR

DESCRIPTION	
KEY	COMPONENT
P103	PLUG-SENSORS,CONTROL
P110	PLUG-THERMOSTAT INPUT
P112	PLUG-COOLING SENSOR INPUT
P113	PLUG-BLOWER & COOL 1 CONTROL
P114	PLUG-SENSOR INPUT
P115	PLUG-ECONOMIZER OUTPUT
P125	PLUG-BLOWER PROVING
P126	PLUG-JUMPER,BLOWER PROVING
P142	PLUG-ECONOMIZER HARNESS
RT6	SENSOR-A55 DISCHARGE (IMC)
RT16	SENSOR-RETURN AIR TEMP
RT17	SENSOR-OUTSIDE AIR TEMP
S27	SWITCH-FILTER
S42	OVERLOAD-RELAY,BLOWER MOTOR
S52	SWITCH-AIR FLOW
S86	SWITCH-DEHUMIDISTAT 65F8601
TB1	TERMINAL STRIP-24V CLASS II
TB34	TERMINAL STRIP-TRANSFORMER TI

TB1 6 — 21 FIRE ALARM CONTACT SUPPLIED BY INSTALLER



THERMOSTAT HOOKUP FOR SELECTABLE OPTION #3, ECTO 5.04 ON M1-5 OR BETTER IMC BOARD (A55)

TO PROVIDE THREE COMPRESSOR STAGES. REQUIRES 3 HEAT,3 COOL THERMOSTAT AND K27 RELAY

1. S27 AND S52 ARE OPTIONAL
2. REMOVE JUMPER WHEN OCCUPIED-UNOCCUPIED OPERATION IS DESIRED. UNIT REMAINS IN OCCUPIED OPERATION WITH JUMPER
3. TB1-19 IS SERVICE RELAY OUTPUT (24VAC). IF USED CONNECT TO A INDICATOR LIGHT OR RELAY COIL (MAX 4VA)
4. J99/P99,J100/P100 AND J103/P103 ARE NOT USED ON-036,042,048,060,072,088 AND 100 UNITS
5. ALTERNATE REMOTE LOCATION OF RT6
6. USE S86 DEHUMIDISTAT AND K55 RELAY FOR OPTIONAL REHEAT SCHEME, SET PARAMETER 4.24 TO CONTROL VALVE 1 FOR SIMULTANEOUS HEATING AND COOLING
7. TB1-20 FOR DEHUMIDIFICATION CONTROL
8. A42 AND S42 HOOKUP FOR UNITS LESS INVERTER

——— DESIGNATES OPTIONAL WIRING
— — — — CLASS II FIELD WIRING

WIRING DIAGRAM	5/04
ACCESSORIES	
ELECTRONIC OR ELECTROMECHANICAL THERMOSTAT FOR "S" SERIES UNITS 2 HT 2 CL	
TEMPERATURE CONTROL SECTION C2	
Supersedes Form No.	New Form No. 534,701W

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SEQUENCE OF OPERATION

POWER:

1 - Terminal strip TB34 energizes the thermostat components with 24VAC via TB1.

OPERATION:

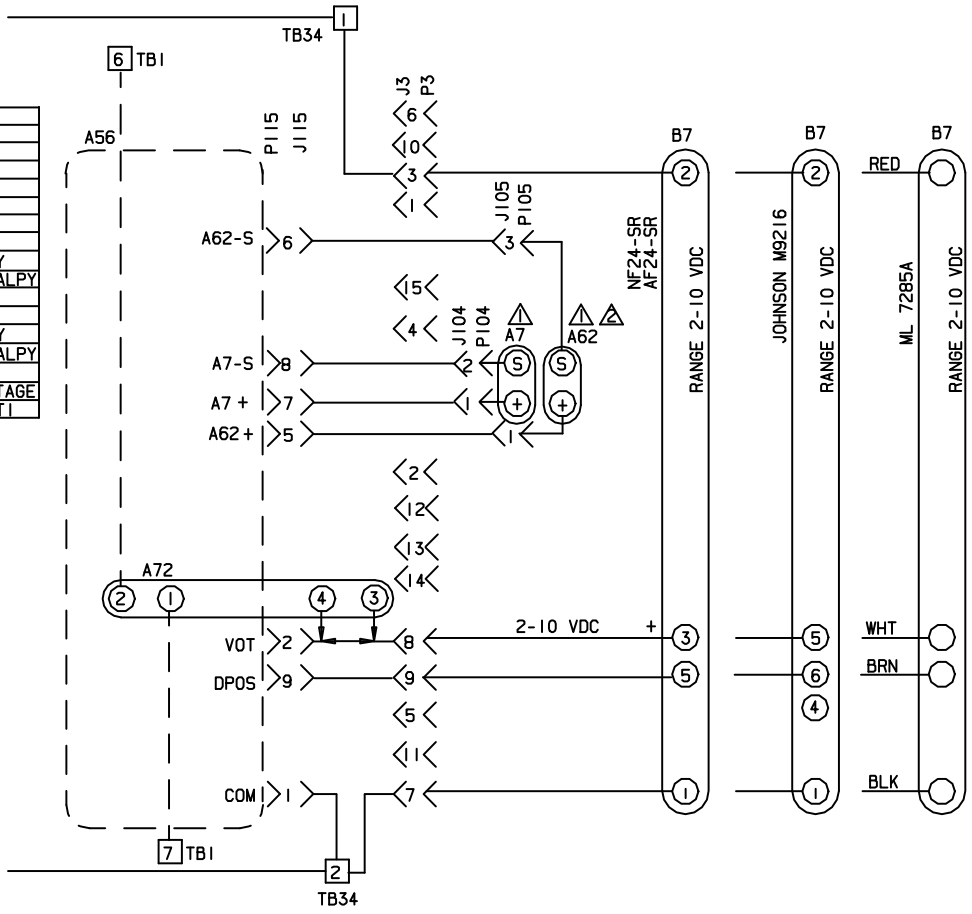
2 - The main control module A55 proves the optional N.O. filter switch S27(indicates dirty filter when closed), optional N.O. air flow switch S52(indicates no air [i.e. broken belt] system shuts down), and optional C.G.A. -50°C low ambient kit thermostat S59 (used in C.G.A. units only).

3 - The main control module A55 receives data from the supply and return smoke detectors A17 and A64, optional phase protection monitor A42, blower motor overload relay S42, discharge sensor RT6, return air sensor RT16, and the outdoor air sensor RT17.

4 - The main control module A55 receives data from the electronic thermostat A2 (Y1, Y2, W1, W2, G, OCP) and the CO_2 sensor (if economizer is used) via terminal strip TB1. A55 energizes the appropriate components.

"L" SERIES ECONOMIZER

DESCRIPTION	
KEY	COMPONENT
A7	SENSOR-SOLID STATE ENTHALPY
A56	PANEL-ECONOMIZER
A62	SENSOR-ENTHALPY, INDOOR
A72	CONTROL-REMOTE, MIN POS(OPT)
B7	MOTOR-DAMPER
J3	JACK-UNIT ECONOMIZER
J104	JACK-SENSOR, OUTDOOR ENTHALPY
J105	JACK-SENSOR, RETURN AIR ENTHALPY
J115	JACK-ECONOMIZER, OUTPUT
P3	PLUG-UNIT ECONOMIZER
P104	PLUG-SENSOR, OUTDOOR ENTHALPY
P105	PLUG-SENSOR, RETURN AIR ENTHALPY
P115	PLUG-ECONOMIZER, OUTPUT
TB1	TERMINAL STRIP-CLASS II VOLTAGE
TB34	TERMINAL STRIP-TRANSFORMER TI



NOTE: THIS DIAGRAM USED ONLY WHEN ECONOMIZER OR MOTORIZED OUTDOOR AIR DAMPERS ARE INSTALLED

⚠ DELETE A7 AND A62 (IF USED) FOR EITHER GLOBAL ENTHALPY OR SENSIBLE TEMPERATURE CONTROL

⚠2 FOR UNIT DIFFERENTIAL ENTHALPY CONTROL, ADD A62 RETURN AIR ENTHALPY SENSOR

WIRING DIAGRAM	8/97
ACCESSORIES	
"L" SERIES ECONOMIZER AND MOTORIZED OUTSIDE AIR DAMPER	
ECONOMIZER-SECTION DI	
Supersedes Form No. 531,713W	New Form No. 531,770W

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SEQUENCE OF OPERATION

POWER:

1 - Terminal strip TB34 energizes the economizer components with 24VAC.

OPERATION:

2 - The main control module A55 along with outdoor enthalpy sensor A7 and indoor enthalpy sensor A62 (if differential enthalpy is used) communicates to the economizer control module A56 when to power the damper motor B7.

3 - The economizer control module A56 supplies B7 with 0 - 10 VDC to control the positioning of economizer.

4 - The damper actuator provides 2 to 10 VDC position feedback.

NOTES